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Gifts..

. . . of soap will be immensely popular this year. Fragrance is the outstanding appeal to women, therefore we invite you to consult our group of gifted perfume-chemists who excel in creating soap perfumes that are different —and delightful.

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Safety Indicator

. . a New Fuld Invention that instantly shows when the solution has lost its disinfecting power!

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EXTRA 95-96% Aldehyde	$8.15
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ESTABLISHED 1910 — GD — AROMATICS DIVISION

Volume XXII
Number 12
December, 1946

SOAP and SANITARY CHEMICALS

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254 West 31st St., New York, N. Y.

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SENSATIONAL *New* RAT KILLER...

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CONTAINS AN EXCLUSIVE RARE EXTRACT RATS CAN'T RESIST

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In bulk and handy, popular sized cans imprinted with

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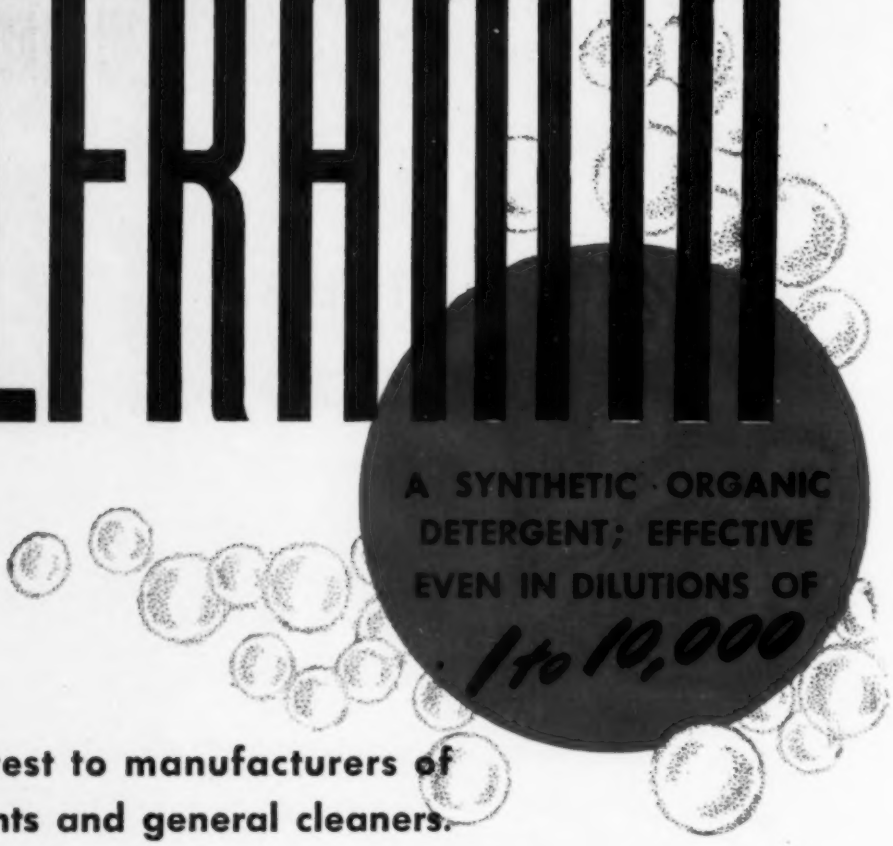

Of special interest to manufacturers of laundry detergents and general cleaners.

SULFRAMIN DT and SULFRAMIN LW (Powder) Powerful synthetic detergents and foaming agents unsurpassed wherever hard water presents a problem. LW has a higher lauric content, and consequently is preferred when used in water colder than 50° C. Consequently LW is recommended for automotive cleansers since cold water is commonly used for car washing. Manufacturers of bath preparations and laundry detergents use either type, depending on whether detergent is prepared for hot-water or cold-water use.

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Baird & McGuire, Inc.

HOLBROOK, MASS. ST. LOUIS 15, MO.

Winter-phene

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and gain these plus values

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retarded rancidity

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The dependable high quality of STANDARD SILICATES simplifies soap-makers' production problems. Made according to close specifications, Standard Silicates are available in grades suitable for making flake, powder or bar soap.

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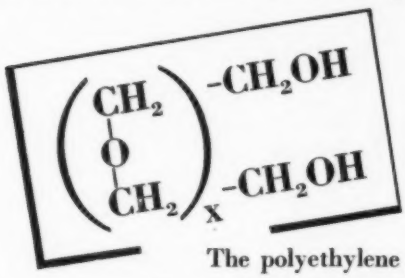
. . . water-soluble, non-volatile intermediates



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You will find them worthy of investigation in developing detergents; textile and metal lubricants; emulsifying and dispersing agents for insecticides, and pharmaceuticals; and ointment bases and components of cosmetic preparations.

	Average Mol. wt.	Freezing Range, °C.	Specific Gravity 20/20 °C.	Saybolt Viscosity at 210 °F., sec.	Comparative Hygroscopicity (Glycerol = 100)
Polyethylene Glycol 200	190 to 210	Supercools	1.12	38 to 41	90
Polyethylene Glycol 300	285 to 315	-15 to 8	1.13	42 to 46	70
Polyethylene Glycol 400	380 to 420	4 to 10	1.13	45 to 55	60
Polyethylene Glycol 600	570 to 630	20 to 25	1.13	60 to 70	50

For further information, ask our nearest office for the booklet "CARBOWAX Compounds and Polyethylene Glycols" (Form 4772).

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Unit of Union Carbide and Carbon Corporation
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P-19933

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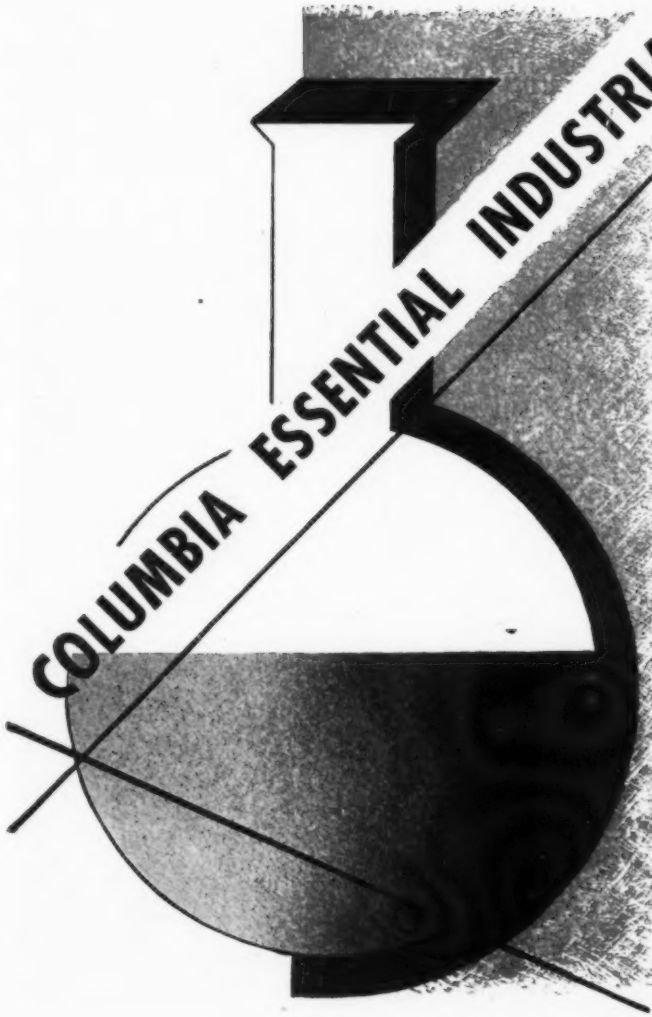

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CAUSTIC SODA

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(Bottle Washer)

MODIFIED SODAS

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*SODA BRIQUETTES
(Iron Desulphurizer)

*CALCENE T
(Precipitated Calcium Carbonate)

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PERFECT FOR PERFUMING...

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- LIQUID CLEANSERS
- POLISHES, ETC.

Even when Oil of Citronella was low in price and easy to obtain, JAVONELLA was a reliable favorite. A great many manufacturers preferred its finer, cleaner odor, its uniform quality and consistent economy. And now that Citronella is so high in price and difficult to get, JAVONELLA is more important to you than ever before.

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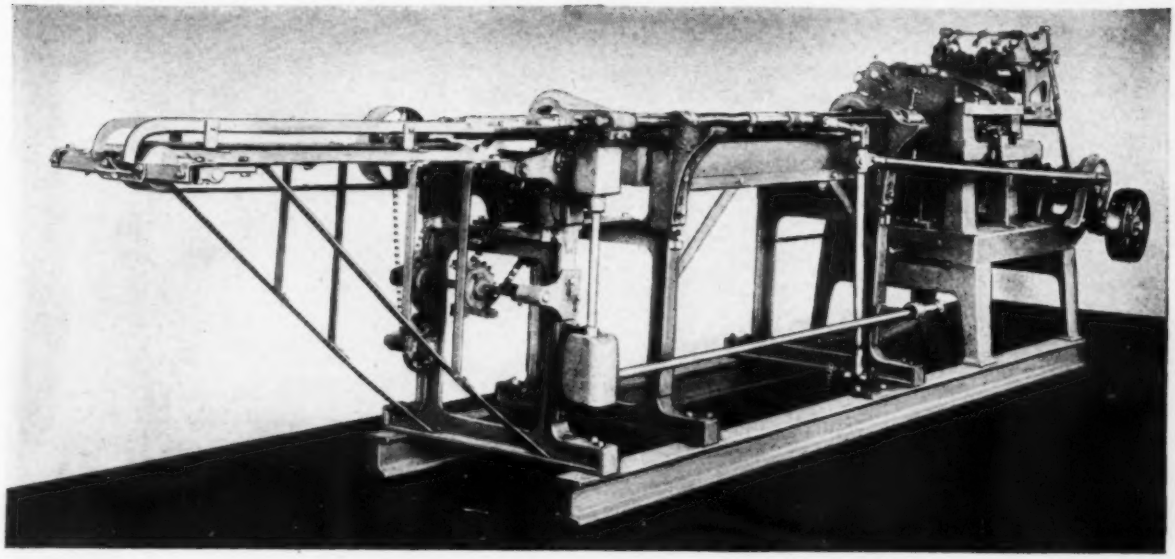
MANUFACTURERS OF AROMATIC CHEMICALS, ESSENTIAL OILS, PERFUMES AND FLAVORS

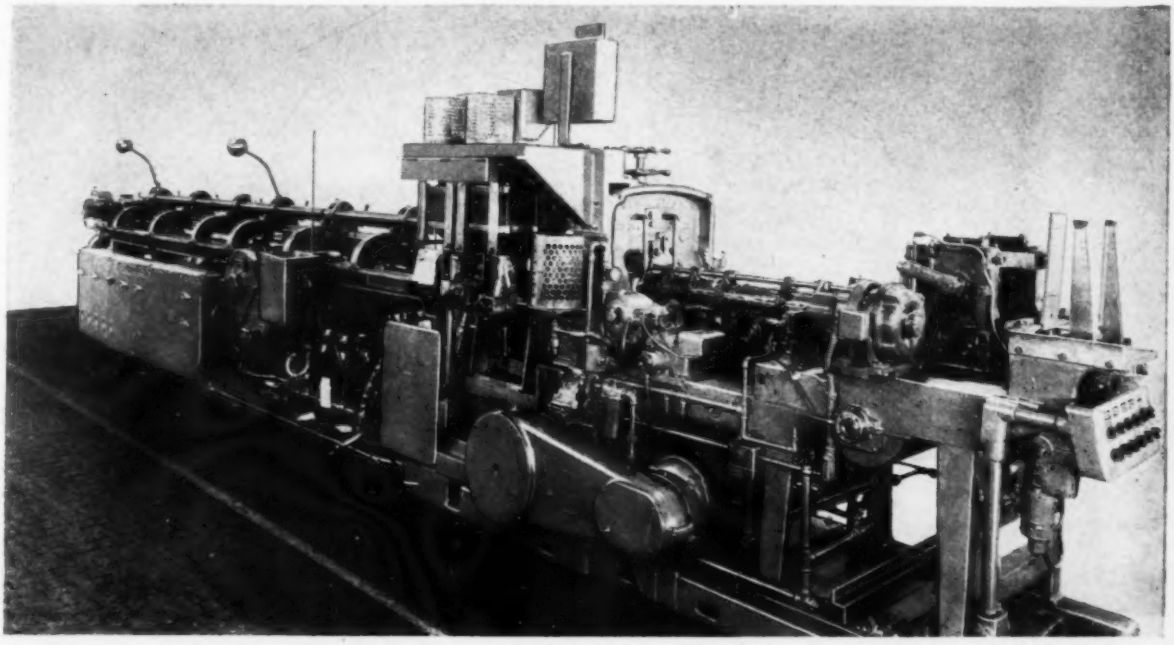
YOU'RE FASTER . . . WE'RE FASTER!



In 1904, this old-type can-making machine was a nine days' wonder . . . the last word in container production.

Geared to the nation's modest industrial requirements of that day (less than $42,000,000 worth of cans), it produced 75 containers a minute.

Nothing sensational by today's standards, but it did the job of supplying American industry with a round, metal package in limited quantity.



Today it's another story . . . *packaging* is a *must*—and the day of the open cracker barrel is almost a forgotten memory.

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and best wishes for this promising new year

Bright is the promise of this new year for the perfume and cosmetic industry. New opportunities are presented for the development and marketing of products of every description.

Givaudan-Delawanna looks forward to a year during which we will be able to make our materials increasingly available to the perfume-consuming industries. These industries, in turn, can enhance the value of their commodities by the judicious choice of artistically blended aromatics and perfume oils.

At Givaudan you will find the widest range of synthetic aromatic chemicals and perfume raw materials. At Givaudan there will be placed at your disposal the services of an experienced staff to aid you in making 1947 the best year in your history.

"TRADITIONALLY... PROGRESSIVELY... DEPENDABLY GIVAUDAN"

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A COMPLETE LINE OF STEEL SHIPPING CONTAINERS

The Triple-C means best in quality, service

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THAT KEEPS SURFACES IN THE CLEAR

QUADRAFOS* IN YOUR COMPOUND PREVENTS FORMATION OF CURDS AND SCUM

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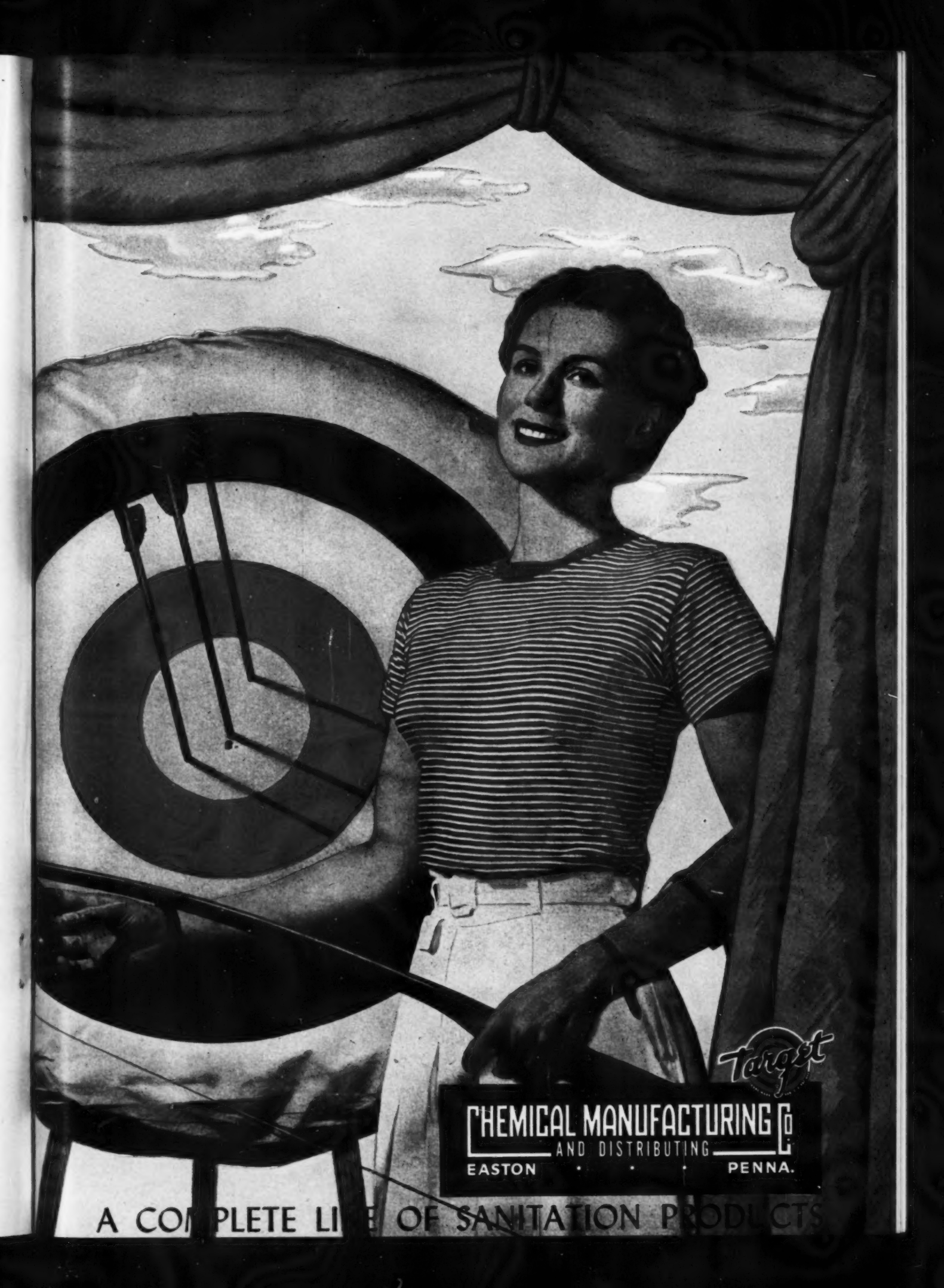
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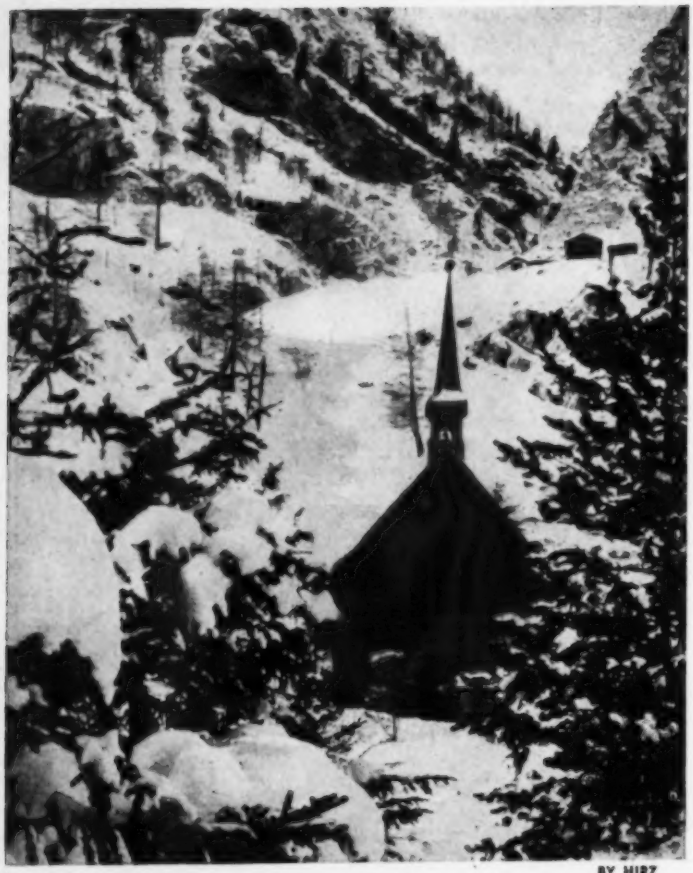

BY HIRZ

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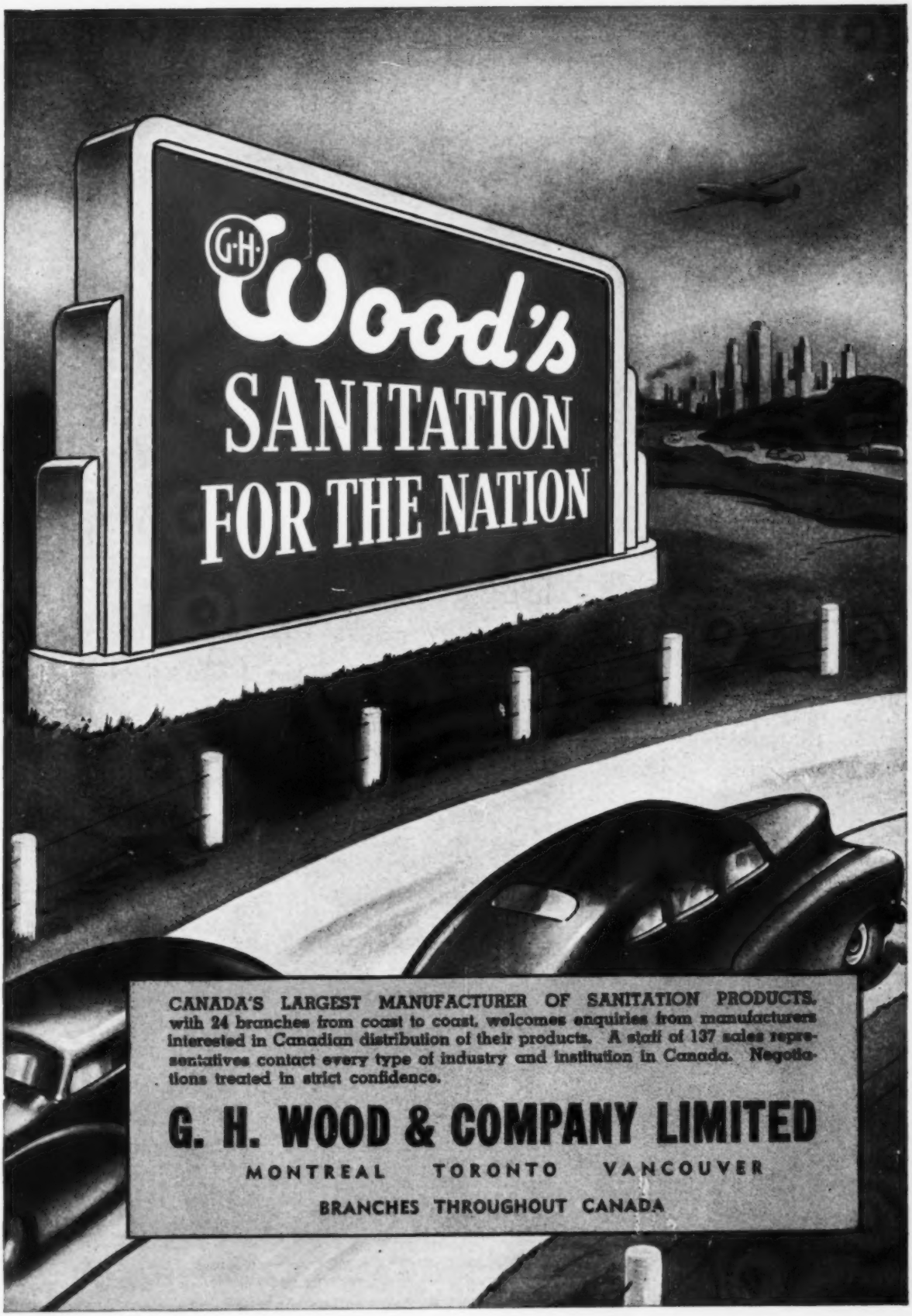
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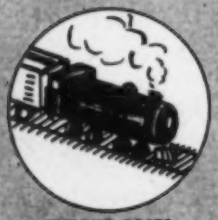

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AS THE EDITOR SEES IT

AT a recent meeting in Washington called by the Secretary of Agriculture, 1947 fat and oil needs of the United States were reviewed with a number of representatives of large consuming industries. Department of Agriculture figures discussed at the meeting estimated total oil and fat requirements for 1947 at approximately nine billion pounds or about 65 pounds per capita. Of this total, 24 pounds per capita were indicated as the inedible fat and oil figure to cover the needs of soaps, paints, lubricants, linoleum, and others. Just how much of this 24 pounds might reach the soap kettle was not heard, but it would probably have to be more than half to cover minimum domestic soap requirements under present conditions.

From such estimates of available fats and oils for 1947 which we have noted from both government and commercial authorities, weighing various factors and stacking them up against the estimated needs, our guess would be that the inedible fat and oil picture for 1947 does not look as gloomy as we had anticipated. If the country is not plagued by a continuation of large-scale labor troubles, the middle of 1947 might well see a marked change in the relation of supply and demand in the oil and fat markets.

SHARP advances in prices for glycerine and many soap products following decontrol were not unexpected. With the upsweep in the market for inedible fats and oils which preceded soap and glycerine decontrol, either soap prices had to be moved up proportionately or the paralysis of soap manufacture would have continued indefinitely. The same was true of glycerine, the high prices at which imported glycerine sold prior to decontrol indicating quite clearly the path which would be followed by prices for domestic glycerine when controls were removed.

Now that both inedible fat prices as well as soap prices stand well above the former OPA ceiling levels, there is hope that production will be stimulated to the point where prices before long will again seek something akin to normal levels. Already the movement of soap products has shown an increase and there is a feeling that the end of the acute shortage is in sight. At least, we know now that the supply situation will show steady improvement in spite of the fact that current world-wide fat and oil supplies continue inadequate for all needs. And in this latter respect, let us also not forget that those who have studied the oil and fat markets over the years know better than anyone how miraculous at times has been the transformation of shortages into plenty under the stimulus of high prices.

SIGNIFICANT is the recent announcement by a leading manufacturer of basic synthetic organic detergents that they do not intend to advance prices at this time. Pointing to the fact that prices for their synthetics have been reduced consistently over the years in spite of the intervention of war, they remind that price levels on synthetic detergents are today about one-third of what they were fifteen years ago. They lay their ability to sell at lower prices to technical advances and greatly increased production.

For years, the greatest obstacle in the path of the synthetic organic detergents has been high cost in comparison with soap. For specialized technical uses, this has not been too great a drawback as the steady increase in production has demonstrated. But in the small package household field, it has been until recently a retarding influence. In the light of current higher soap prices, however, the situation appears to have reversed itself.

Opportunity beckons to the synthetic detergents indicating that now is the time for them to take over a larger share of the market. And al-

though the opportunity may exist, the ability to grasp it fully at this time is lacking. The production of synthetic detergents, at present far and away ahead of anything anticipated a few years back, is still insufficient to supply the widened demand. Were output three times the current figure, it would still not be enough, although new production expected in 1947 may help to relieve this condition, at least temporarily. In short, the obstacle of high cost has been removed, but so great has demand grown that the obstacle of insufficient production has arisen to take its place.

As we see it, behind the "no price advance" lies the fact that synthetic detergents have come of age, have become tonnage products to take a permanent large-scale place in the detergent field, have graduated from the small specialty class into a class where the production and marketing ability of their makers will have to meet the acid test and stand up under Class A competition, not competition particularly from soap products, but also from other products within their own close sphere.

Among some who are close to the synthetic detergent picture, no appreciable interference with soap production and sale seems to be anticipated. One authority ventured a guess that within ten years the combined American production of soaps and synthetic detergents would exceed *eight billion pounds* per year. Of this tremendous total, he placed the average yearly soap output for the 1950's at five billion pounds. He envisaged a widely expanded market for all detergent products in which the synthetics will play an increasingly important part.

THE recent offer by the Government of some twenty million pounds of coconut and babassu oils left over from war-time stockpiles took most soapers by surprise. They did not know that these oil stocks existed and some resented the high price demanded. The oils, reputedly in bad shape, had been taken up a long time ago at much below the present market. A feeling that this surplus should have been allocated at the former low prices to those who were forced to give up coconut oil in the war emergency was expressed by some soapers in rather blunt language.

HOME-MADE soap has had an upward surge during the past six months as might be expected. People who never made soap before in their lives have been turning their kitchen grease into a product which to the casual observer resembles soap. Farm wives who some years ago ceased making their own soap have resumed owing to the shortage of factory soap. The New York Public Library, swamped by requests for formulas and procedures for soap making at home, have had a small reprint made up to save time and headaches for library personnel. Newspapers and magazines have published a hundred and one ways to make soap in the kitchen. Radio broadcasts have followed suit. And fat collections, unstimulated by the weak case which the fat salvage committee is now forced to present with the war over, and damned by public criticism, have dwindled to a trickle.

That so many housewives will muddle through with these gosh-awful alleged soaps of their own making might be evidence of the desperation of their plight. Or, it might lend credence on the other hand to our belief of years that the public does not know good soap from a Christmas tree, that the efforts of American soapers in turning out the best piece of soap in the world for very little money has been a stellar performance to a wholly unappreciative audience. Too many housewives still believe that this partially saponified goulash which they cook up on the kitchen stove is truly a superior product to soap which they buy in the stores.

With the advent of soap once again on store shelves,—and avoiding any thought of a depression which might knock the stuffing out of rank-and-file incomes,—the popularity of home-made soap should again recede to its normally inconspicuous position. Even though the soap which is so easy to make from the formula on the lye can and which gets Uncle Willie's shirts so snowy white may be vastly superior, the ease, luxury, and convenience of a nice clean package of store soap will, as before, triumph over the muss, mess and uncertainty of soap a la kitchen.

in the wake of DECONTROL

a review of developments in the fat and oil supply outlook - the higher prices facing soap makers - and the adjustments that have been made in selling prices of soaps since decontrol

AT no previous time in its history, in all probability, have more things happened in and to the soap industry in such a brief period than have happened in the past 30 days. The past weeks have seen controls abandoned on oil and fat use, price ceilings have been tossed overboard, prices on tallow and coconut oil, as well as all other soapmaking oils have advanced sharply, and soapers have been faced with the necessity of advancing their own prices on finished soaps in proportion, and justifying these advances to the soap buyer. They have seen tallow and coconut oil more than double in price as compared with former ceiling prices, and they have been faced with the necessity of passing along to their customers advances in soap prices ranging as high as fifty per cent. Meanwhile they still face a continuing shortage of fats and oils, a situation which threatens to deteriorate still further over the coming year, and a demand from soap users which they still cannot come even close to meeting.

The end of price controls, which came just about a month ago, started a series of sharp advances in fat and oil prices. Tallow and coconut oil which under OPA had been ceiling priced in the neighborhood of 9 cents per pound, jumped abruptly to 22 cents. Soya bean oil shot up to 25 cents. Acidulated fatty acids (95 per cent) which under price control had been selling at 7½ cents, moved up to 16½ and distilled fatty acids moved up from 12 cents to 27 cents. In many cases somewhat lower figures are mentioned on future deliveries, with futures ranging down to four or five cents a pound below the spot market depending on remoteness of delivery date. The opinion seems rather general in the trade that the market has passed its peak, and will eventually, after this first flurry is over, settle down to something a little more closely reminiscent of former normal prices. A return to nine cent tallow and coconut oil cannot be looked for, however, until the fat and oil shortage has been cracked, and normal supplies of soap making oils and fats are once more freely available.

No substantial relief can be looked for short of 1948, most oil and fat experts agree. According to the latest report (November) on fats and oils issued by the U. S. Department of Agriculture, output of fats and oils in the United States in the year beginning October, 1946, will be the smallest since 1939. Production of fats and oils from domestic raw materials is estimated at 8,700,000,000 lbs., about equal to the average for the 1937-1941 crop years, but two and a half billion pounds less than the peak war-year production of 11,200,000,000 lbs. reached in 1943-44.

The Department predicts that no substantial price relief can be looked for during the coming year, although prices may decline somewhat from their present abnormally high levels. The current general level of prices is triple pre-war levels, and about twenty per cent higher than the previous peak reached in 1919. Because of the high level of prices, output of tallow and grease can be expected to mount substantially this winter, the department believes, but production of grease may fall off in the late spring as a result of the sharp cut in the size of the 1946 fall pig crop.

The key to the soap maker's supply problem is still, of course, to be found in shipments of copra and coconut oil from the Philippines. The Department of Agriculture estimates that imports of copra and coconut oil into the United States will total 350 to 400,000,000 lbs. for 1946. In 1947 it is estimated that imports may be expected to reach the pre-war level of above 600,000,000 lbs. The stimulus of today's sharply higher prices could quite readily result in this total being substantially topped. In many a previous market high prices have performed their normal economic function in a competitive economy of pulling out every pound of available fat and oil and drawing it to market. Meanwhile, a report that the coconut oil market had been shaken down sharply could not be confirmed by reliable sources. A government sale of 20,000,000 pounds of coconut oil for use by other than margarine production had to be postponed when bids on the oil were rejected as too low.

With their costs for oils and fats up as much as one hundred and fifty per cent, soap makers have necessarily advanced their own selling prices on finished soaps in line with replacement costs on fats. Lever Bros. an-

nounced on November 15th that they had advanced their prices by an approximate average of 50 per cent. Walter W. McKee, vice-president in charge of sales for Lever, said in explanation of the price advance: "The present scarcity of fats and oils is, of course, primarily responsible for the rise in price of these commodities from which soap is made. "According to a recent report the stocks of fats and oils in the United States on October 1, 1946 had dropped about 400,000,000 pounds during the preceding twelve-month period to the lowest point in eighteen years.

"We look forward, as we know everyone does, to a time when supplies of fats and oils will become more adequate and prices of our raw materials will drop back to normal levels. When that happens, you may be sure that Lever Brothers will readjust prices downward with the greatest possible speed."

Colgate-Palmolive-Peet Co. gave time on several of their radio programs to explanations of the soap price advances. "The cost of all ingredients that go into making soap," they explained "has increased tremendously. Lots of the ingredients have doubled in price. Fats and oils, which are a big percentage of the total cost of soap, have increased from approximately nine cents per pound to twenty to twenty-one cents per pound. And packages, wrappers and the other things needed to get soap to the store have gone up a lot as well."

Wages and salaries have also gone up substantially, the C-P-P statement continued, making a substantial increase in wholesale prices of soaps absolutely essential.

Potash soapers as well have found it necessary to raise their price levels. Typical was the announcement by one potash soap maker in the New York area that his 30 per cent coconut oil shampoo, formerly selling at 70 cents, would now be priced at $1.10, his 40 per cent shampoo, formerly priced at 80 cents, was advanced to $1.25. Castile soap went from $1.00 to $1.25, USP green soap from 12 to 16 cents and 40 per cent soft potash soap from 7½ to 12½ cents.

The reaction of merchants and housewives to the advancing soap prices has been mixed. Housewives have generally been rather shocked by the extent of the advance in prices. But they need soap so badly, that they have been buying any available supplies even though they object to the higher prices. This at least is the observation of A. F. Guckenberger, executive secretary of the New York State Food Merchants Association, after reviewing the New York market.

ANOTHER statement on soap supplies and prices was issued by Eugene C. Schulz, New York City Markets Commissioner, who said: "soap and soap powder are beginning to reappear here and there on retail shelves. Soap manufacturers have stepped up their output and within a few weeks the acute shortage of the last few months will have eased considerably."

Some sample prices that he quoted were: White soap, large cake, 16 or 17 cents, compared with OPA ceiling price of 10 cents; soap powder, large box, 38 cents, compared with 24 cents; toilet soap, 12 cents, compared with 7 cents.

Patsy D'Agostino, president of the National Association of Retail Grocers and proprietor of several local markets, said he had received little soap. One brand of flakes, however, for which he formerly paid $5 a case, had been delivered for $7.60, or 32½ cents a package. His retail price consequently went from 23 cents to 37 cents.

Some merchants protested the retail prices suggested by one large toilet soap manufacturer. This manufacturer had announced a price to wholesalers of $13.00 a gross, which would result in a price of $14.50 to $15.00 to the retailer. The producer is suggesting a retail selling price of 10 cents per cake, which, the retailers point out with considerable concern, would result in a net loss to them of at least 10 cents per gross.

In sharp contrast with the advancing price levels on soaps is the announcement by at least one large supplier of raw materials for the manufacture of synthetic detergents that its prices would be unchanged. As a matter of fact they look for lower rather than higher prices on synthetic detergents, as sales expand and output increases. Synthetic detergents, which got such a big boost during the war years because of the soap shortage, now would seem to have an even better opportunity to gain and hold consumer favor if prices can be held down in contrast with advancing prices for soaps.

From one price advance the soap maker stands to benefit. That is the advance in the price of glycerine, the soda soap maker's most important by-product. Held at 12¾ cents per lb. under OPA, while imported glycerine was allowed to sell at 82 cents, domestic glycerine moved up quickly to 60 cents as soon as controls were abandoned.

In the wake of price decontrol have come a series of other price advances apart from those referred to above in fats, oils and finished soaps. Caustic soda and soda ash have been advanced in 1947 contract schedules announced by a leading alkali manufacturer. The 1947 price schedule in carload lots, f.o.b. seller's works is as follows: Soda Ash, 58 per cent, light, bulk, $1 per cwt., paper bags $1.20, burlap bags, $1.30, barrels, $1.60; dense ash, bulk $1.08 per cwt., paper bags, $1.28, burlap bags, $1.38, barrels, $1.68 per cwt. New caustic soda prices are: 76 per cent, solid, drums, $2.50, flake, drums, $2.90, ground, drums, $2.90, 50 per cent liquid, seller's tank cars, basis 76 per cent, $2.10 per cwt. The 1947 contract prices are from 10 to 20 cents higher on soda ash and caustic soda than 1946 contract prices.

The higher wages paid to labor and the acute shortage of chlorine are the most important factors behind quite a series of advances in chemical quotations. Paradichlorbenzene has been advanced recently from 12½ cents to 14 cents (lcl). Carbon tetrachloride (technical) has been advanced ½ cent per pound. Phenol, unavailable in the spot market, has been upped from 11 cents to 12 cents. Perfuming materials, containers and machinery prices have been revised upwards since the general lifting of price controls.

Fatty Acid Selection

A review of the manner in which the physical chemistry of fatty acids affects the properties of the derived soaps

By J. W. McCutcheon

IN most articles wherein the physical chemistry of soaps is discussed, it is usual and perhaps expeditious to strike to the core of matters at once and consider them only in relation to their physical properties. The importance of such studies cannot be underestimated. J. W. McBain of Stanford University and his co-workers have contributed voluminous data on this subject over the past quarter century, which only in recent years is beginning to be appreciated industrially. It is the author's opinion however, that the physical chemistry of the soaps can better be appreciated by a preliminary and general discussion on the physical chemistry of the fatty acids themselves. It is easy to say for example that hydroxylation of the fatty acid chain decreases the detergency property of the derived soap. It is another matter when it comes to understanding why this should be so.

Soaps in general are the salts of the fatty acids whether metal or not. The characteristics of these soaps are as variable as the cations themselves and it is not possible to predict just what differences might be expected any more than it is possible to predict accurately for example the properties of silver chloride given those of the copper salt. When attention is focused on a particular cation such as sodium, however, the basis of the hard soaps, then the variation between members is a matter of changes in the fatty acid anion only, and their properties are reasonably subject to prediction. If only the saturated acids are considered, such as lauric, myristic, palmitic and stearic etc., such variations can be predicted with almost mathematical precision in each case. When unsaturation is introduced, a more complex situation arises, and when hydroxylation is added as well, the problem becomes still more complex.

Considering the saturated acids for the moment, three types of physical measurements have been very effective in interpreting their structure and hence also the structure of the derived soaps. These are studies of crystal spacing by X-rays, similar measurements by electron diffraction methods and the study of mono-molecular layers. The findings of each, contribute something new to our knowledge of chain structure. They all corroborate one another where they have something in common. Pooling the information derived therefrom and omitting the laborious and intricate reasoning behind the data accumulated, we discover that the fatty acid chains are zig-zag structures with a hydrophobic tail and hydrophilic head which orient themselves at a water surface so that they form a net of single layer molecules with the carboxyl group down in contact with the water and the tail or hydrocarbon chain pointing out, much as iron filings are oriented at the surface of a magnet. The angle of projection in general is not vertical, but depends on the terminal ending just as the angle of a three-legged stool depends on how short one leg is cut.

Thus the barium salt may have one angle, the sodium another and the esters still another. In fact the angles which the esters make with a surface whether on glass or water can be associated with their polymorphic form. Likewise, a similar variation of the sodium salt angles may be associated also with their polymorphic state existing at the time of examination. How these changes occur is explained by the mode of packing the crystals. A great deal of data has been accumulated on this subject, chiefly by R. D. Vold and co-workers. Data on sodium palmitate below is typical and includes all phases found to date.

The figures on pages 44 and 45 illustrate a few of these fatty acid properties. Figure 1 for example shows the zig-zag chain structure with an average distance of 1.26 Angstrom units between each CH_2 group. Figure 2 shows how the oriented surface molecules become staggered to make room when pressure is applied. Figure 3 shows the building up of Y layers of fatty acids on a glass or other surface. Under certain conditions, the head to head layers can be cushioned with water or other solvent to a variable degree, thereby explaining certain types of hydration and gel structures of the soaps. Figure 4 shows the variation of angle with terminal ending. It is to be noted how the first layer is bunched, indicating the effect of the molecular structure of the metal or other surface. In the case of stearic the first layer is also held vertical by the power of affinity between metal and acid as against the acid to acid layers following.

When the acids are free there is a powerful attraction between the carboxyl groups which causes them to associate in pairs. This attraction actually causes the end atoms to become distorted as shown by the diagram in Figure 5. Distances are given in Angstrom units and were derived through spectral and dipole moment

Sodium Palmitate[1]

Phase Transition Temperature	*Phase existing below transition*
65° C	curd, (solid crystalline)
117° C	super curd
134° C	subwaxy
172° C	waxy (white solid deformable)
208° C	superwaxy
253° C	subneat (sticky, liqu'd crystallinephase)
295° C	neat (translucent & plastic)
above	isotropic liquid

[1] Vold, R. D., and Vold, Marjorie J., *J. Phys. Chem.* 49, 32-42 (1945).

studies sufficiently basic to warrant general acceptance. In the paired molecule on the right, the dotted circles represent the original or monomer atom position. Only when the fatty acid chain reaches ten carbon atoms or more, does this association factor lessen to a point where there is approximately complete dissociation at the boiling point.

The salts however, exhibit such association only mildly as evidenced by their hydrated and gel forms under certain conditions. With the sodium salts, for example, hemihydrates are easily formed, the water taking the position between the polar heads and pushing them apart. With additional water they are pushed apart still further so that in dilute colloidal solution the micelles lay in foils with alternate layers of oriented soap separated by a layer of water. When the solvent is non-polar, such as is benzene, the layer of solvent occupies the middle position between the CH_2 or hydrophobic groups.

Thus alternate water and non-polar solvent layers may be held together by alternate layers of soap, indicating the emulsion mechanism of a soap. Recently [Palit, S. R., and McBain, J. W., *Ind. Eng. Chem., 38,* 741-744, (1946)] it has been shown that small amounts of soaps can emulsify effectively two immiscible liquids such as benzene and propylene glycol with a mutual solubility much greater than in either solvent separately. The higher fatty acid soaps are more effective in this respect than the shorter chain ones and sodium stearate is more effective than sodium oleate.

OTHER physical data while interesting from other points of view are not considered essential to this discussion which has as its aim the correlation of above fundamentals to the problem of soap and detergency. For completeness, however, it may be stated that spectral work including infra red, ultra violet and Raman spectra has thrown great light on the structure of the unsaturated bond, while the more purely colligative physical data such as melting point, boiling point, refractive index, parachor, solubility, viscosity, etc., have shown in every case that the relation between any of the homologous members is straightforward and predictable.

Unsaturation of course provides unusual variations. For example, in oleic, where the double bond occurs in the middle of the chain and causes a hairpin bend, the effective chain length appears considerably reduced. Thus the solubility of oleic and its derivatives is closer to the C_{12} chain, lauric acid, than to its parent C_{18} chain, stearic. Elaidic, the artificial trans isomer, is not so affected and behaves in many respects like palmitic acid. With increased unsaturation, as is the case with linoleic and linolenic acids, solubility is further increased over that of oleic in regular steps. The reason must be attributed to the bond itself and not to any kinking of the chain since both these acids have cis structures.

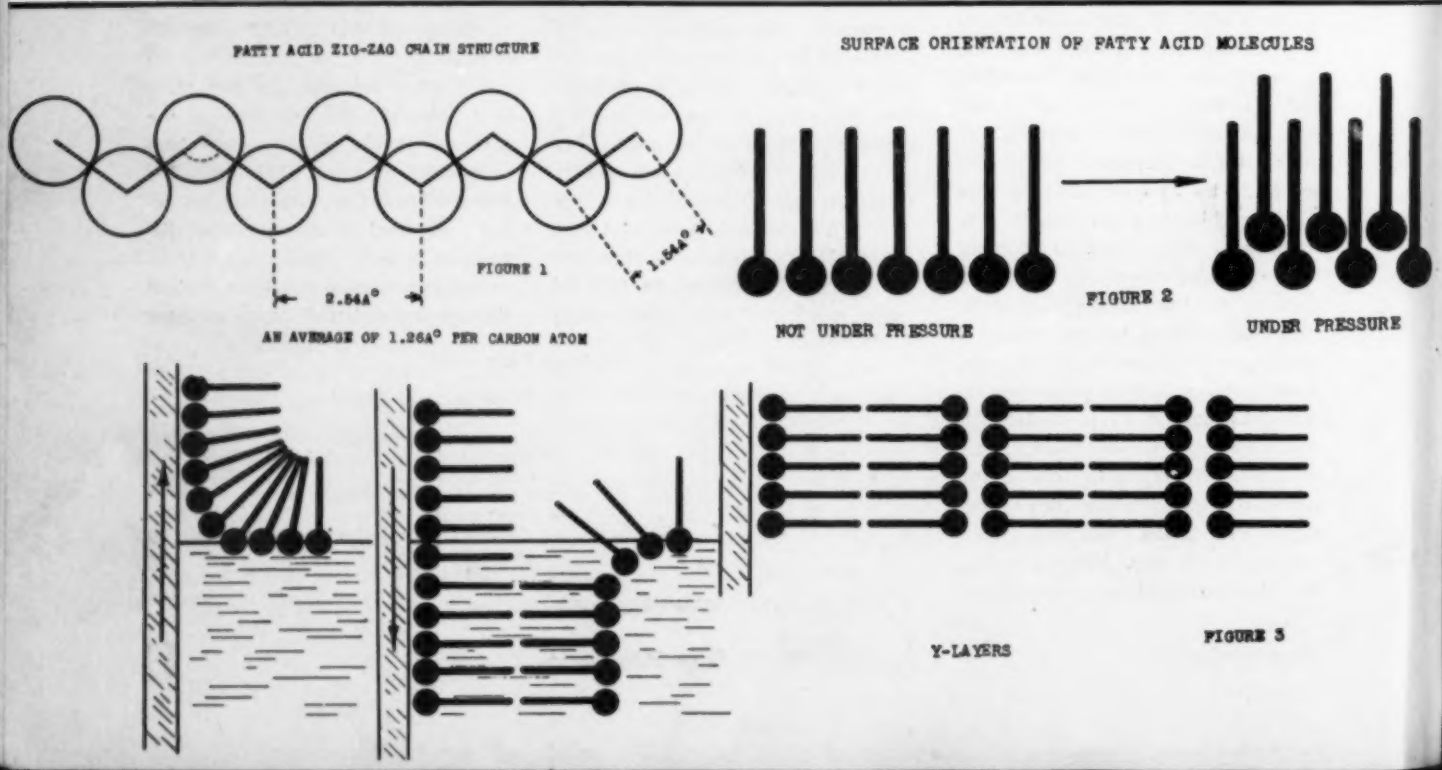
Data from the work of H. D. Foreman and J. B. Brown, *Oil & Soap, 21,* 183-7 (1944), give some indication of this property:

Solubility in Methyl Alcohol in gr/liter at —60° C.	
Stearic acid	insoluble
Oleic acid	.40
Linoleic acid	7.26
Linolenic acid*	13.8

* At —62° C.

The unsaturated acids, being more highly soluble, rinse out of fabrics more freely. On the other hand, they are readily oxidized. This applies in particular measure to the linoleics and linolenic acids and higher homologues and is evident in the soaps prepared from cottonseed oil, soya bean oil, fish oil and the soaps from their related foots.

The introduction of a hydroxyl group into the chain, just as did a double bond, increased the solubility of the acid and its derivatives. With such a hydroxyl group plus a double bond, as in ricinoleic acid, the solu-



bility is increased to a point where the lathering power falls off abruptly. The relation between solubility and detergency has been discussed previously by the author, (Detergents-Synthetics versus Soap. *Soap & Sanitary Chemicals* 22, No. 9, September 1946, p. 38) and will be mentioned only briefly here.

Considering again the monolayers of surface-oriented fatty acids, the ideal emulsion-forming combination will be reached when the hydrocarbon part of the chain and the carboxyl hydrophilic part are in balance so that each exerts the same attraction towards oil and water respectively. The best example of such a condition is illustrated by sodium palmitate where the C_{16} chain length is balanced by the highly hydrophylic and low soluble sodium salt. If the solubility of the carboxyl group is increased by shortening the hydrocarbon chain and thereby reducing the nonpolar element of the molecule, the soap goes into true solution and its surface activity ceases. If its solubility is decreased by increasing the polar constituent of the molecule by lengthening its chain, a point is reached where the low solubility reduces the surface active molecules too far for best results. Since solubility and temperature are related, this balance could be restored by an increase in working temperature of the solution.

For example in round numbers sodium stearate at 180° F. is the equivalent of sodium palmitate at 160° F. We see at once therefore why coconut oil soap, high in sodium laurate and myristate, is a good cold water soap. For proper micell formation the temperature must be reduced to balance the shorter hydrocarbon chain. Below C_{10} of course detergency falls off to a point where the ordinary sodium soaps are of little value. Below C_6 they are considered salts not soaps. Introduction of a double bond or a hydroxyl group increases the solubility considerably and for oleic puts it in a class midway between lauric and myristic. However, one must guard against directly associating solubility with micell formation except under rigid comparative cases.

The potash soaps for example are considerably more soluble than the soda soaps but it would be erroneous to imply that their detergency is thereby adversely affected. Each cation brings a new set of conditions to bear and must be considered as a separate series of compounds.

IN REVIEW, therefore, we may generalize on the physical chemistry of the fatty acids to extend our conception of detergency and emulsification to include cases normally outside the scope of such an investigation. For example, dry cleaning soaps should conceivably have a very extensive hydrocarbon chain structure to give them enhanced hydrocarbon solvency. This is frequently done by only semi neutralizing the acids, thereby forming associated acid soaps. Again, soaps too insoluble to be considered detergents at ordinary temperatures may be satisfactory under special conditions, for example, the lithium soaps for high temperature lubricants. So also, the more water soluble shorter chain fatty acid salts may find a use at low temperatures. It is thus seen that a normal soap, poor in detergency under one set of conditions, may become an excellent detergent under another set.

Conversely, for any particular set of conditions a soap might be devised which will give maximum detergency. This may not always be a practical solution however, because nature turns out her fatty acids in certain well-defined patterns and it is frequently more economical to put up with certain waste or inconvenience in washing with a slightly inferior product rather than to go to the expense and trouble of modifying these natural bricks of construction. Synthetic detergents, because of the very nature of their preparation, are more adapted to such modifications.

The modification of the metallic cation does afford some means of alteration, but unfortunately no graduated steps occur. The difference between the sodium and potassium soaps is very considerable. The sodium soaps are hard, easily salted out, have low solubility and are non hydroscopic. They represent over 9/10ths of all the soaps made. The potash soaps are soft, cannot be salted out, have high solubility, being especially suited to liquid soaps, shampoos, dry cleaning soaps, etc., and are partly hydroscopic. They enter into the specialty field of detergents, and are handled as such by the trade. Higher costs such as increased cost of handling in the kettle, and the high cost of potash, mitigate against their more extended use. Many soap boilers making millions of pounds of hard soaps a month

(*Turn to Page* 165)

STEARATE LAYER ORIENTATION ON A METALLIC SURFACE

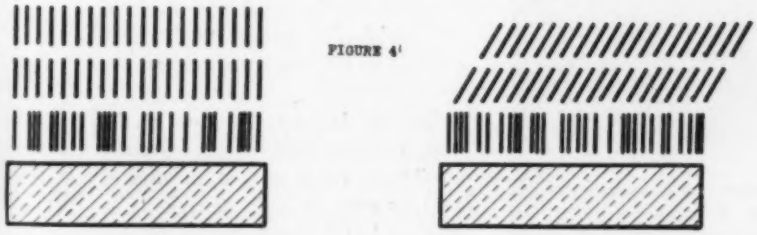
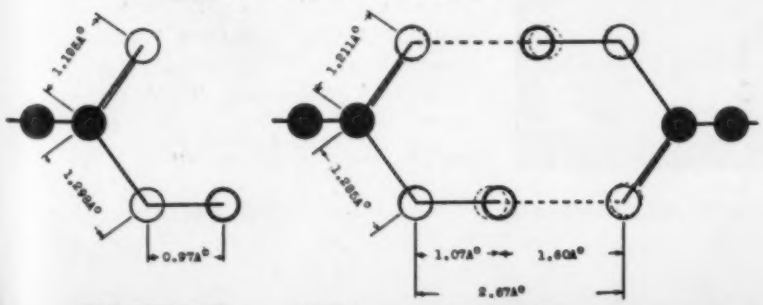


FIGURE 4

BARIUM STEARATE

STEARIC ACID

MOLECULAR DISTORTION OF ASSOCIATED MOLECULES



NON-ASSOCIATED ACID

FIGURE 5

ASSOCIATED ACID

ALKYL ARYL SULFONATES

By Lawrence H. Flett*
National Aniline Division Allied Chemical & Dye Corporation

THE term "alkyl aryl sulfonate," in its chemical sense, covers a multitude of chemical compounds, but its technical application is limited to those compounds which are available as surface active agents. The lowest members of this series, such has the propylated naphthalene sulfonates, are powerful dispersing agents in strong solutions. The highest members are emulsifying and softening agents. The intermediate members, with alkyl groups of 10 to 16 carbon atoms, are the washing and foaming agents. They are the synthetic detergents of the series.

This discussion will be confined to the detergents. They are by far the most important commercially. As a matter of fact, the lion's share of the business in surface active agents is held by the synthetic detergents. These detergents are important because cleaning is one of the most important businesses of the chemical industry. Furthermore, the properties which make these alkyl aryl sulfonates good cleaning agents make them very valuable for many other uses.

The alkyl aryl sulfonates can be made in a variety of ways. Alcohols, olefins, or chlorides can be combined with benzene, phenol, or other aromatic compounds to give products which are easily sulfonated. These sulfonates with their aromatic sulfonic acid group are extremely stable even in boiling acids or alkalis. The most important of the alkyl aryl sulfonates are those in which the alkyl group is derived from a petroleum distillate. These products are low in cost, and are characterized by good solubility.

Fig. 1

The synthetic detergents have been, until recently, far more costly than soap. A few years ago the synthetic detergents were selling for 40 to 80 cents a pound, while soap could be purchased for 4 to 8 cents a pound. It is an interesting fact that, when the prices of synthetic detergents were prohibitively high, they were used exclusively by industry. The major share of the synthetic detergent production has continued to be used by industry. This is a certain indication of the value of the synthetic detergents. Industry would not have paid such a high price for the synthetic detergents unless it intended to recapture this money by better quality or by savings in processing time. The manufacturer of synthetic detergents is always confronted with the problem of directing the use of the detergents into those channels where they are of special value.

The industrial advance of the synthetic detergents and their recent popularity for household uses depend primarily on the speed and economy with which they can be used. Very little attention has been paid to the speed of washing, when in reality this is the most important measure of the value of a detergent. It is of course possible to clean without the use of soap or any synthetic detergent. A shirt can be taken down to the running water and beaten with a stick until it is clean. Cotton has been washed in this way, but it is a very labor-consuming and tiresome method of washing. The dirt on automobiles or walls can be scrubbed off with water alone, but if detergents are used it is not necessary to scrub so hard or so long. The deter-

* Before Natl. Assn. Insecticide & Disinfectant Mfrs., New York, Dec. 2nd, 1946.

gents make washing quicker and easier.

Take, for example, the washing of woolens. The synthetic detergents wash in about one-sixth of the time required for soap. Figure 1 is a study of the comparative rates of washing with "Nacconol NR†," which is an alkyl aryl sulfonate, and with a high-titer soap. This washing is carried out in the Launderometer, a device which washes very slowly as compared to a modern washing machine, but which produces results that are nevertheless comparable. The figure shows that at concentrations of 0.2 per cent, which is the ordinary washing concentration, "Nacconol NR" washes wool as white in 2 minutes as the high-titer soap washes it in 20 minutes. At 0.3 per cent, where washing is speeded up by use of an excess of detergent, "Nacconol NR" washes wool as white in 5 minutes as the high-titer soap washes it in 20 minutes. This time factor is important in the washing of wool because prolonged scrubbing of wool in alkaline solution converts a soft sweater or a fluffy blanket to a stiff felt. Anything which speeds up the washing of wool gives a much softer and fluffier material.

Another example of the increased speed of washing is shown in Figure 2. In this figure oiled metal strips are washed with an alkaline cleaner (5 per cent sodium metasilicate) in the top row, and with an alkaline cleaner to which a synthetic detergent has been added (5 per cent of a mixture containing 95 parts of sodium metasilicate and 5 parts of "Nacconol NR") in the second row. The strips after washing are photographed in ultraviolet light. The clean metal shows black in ultraviolet light, while any oil present fluoresces and shows white. The strips at the left in each row are clean blanks for comparison. The other five strips represent, respectively, washing periods of 2 minutes, 4 minutes, 6 minutes, 8 minutes, and 10 minutes. It will be noticed that the pure metasilicate washes the strip clean in 10 minutes, whereas the addition of a small amount of alkyl aryl sulfonate makes it possible to complete the washing in 2 minutes. This increased speed is about the same as that obtained in the washing of wool.

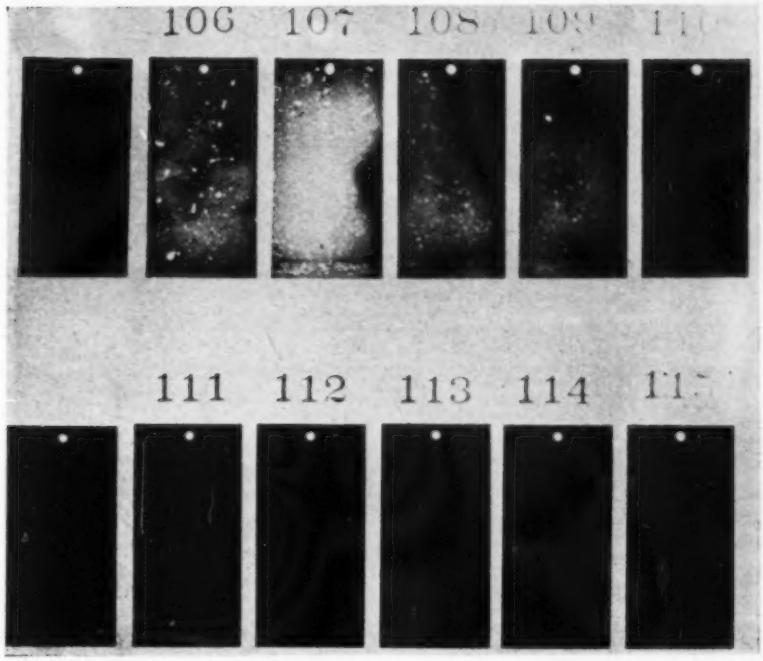
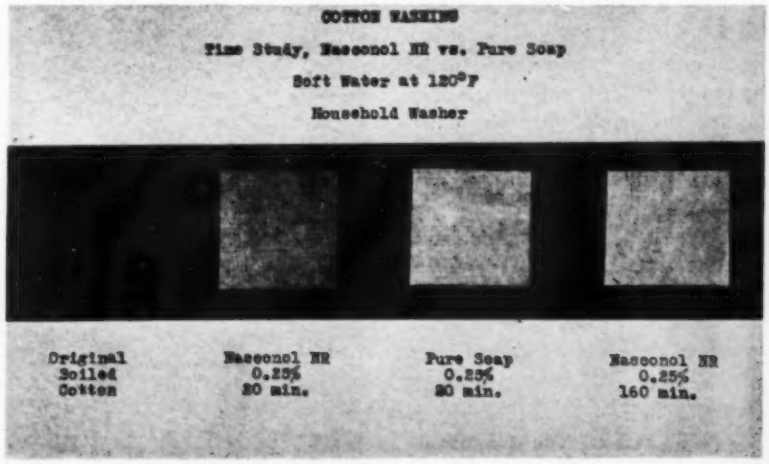


Fig. 2

The washing of cotton is quite the reverse of the washing of wool. The synthetic detergents which are now commercially available wash cotton more slowly than soap. Figure 3 shows the comparative rate of washing cotton with soap and with synthetic detergents. Cotton washes slowly even with soap. It is evident that the housewife would not consider a detergent which would slow down this already long operation.

Really remarkable results are obtained from the proper use of the alkyl aryl sulfonate detergents, but even these very efficient detergents

Fig. 3


COTTON WASHING
Time Study, Nacconol NR vs. Pure Soap
Soft Water at 120°F
Household Washer
Original Soiled Cotton
Nacconol NR 0.25% 20 min.
Pure Soap 0.25% 20 min.
Nacconol NR 0.25% 160 min.

†Trademark, National Aniline Division, Allied Chemical & Dye Corp.

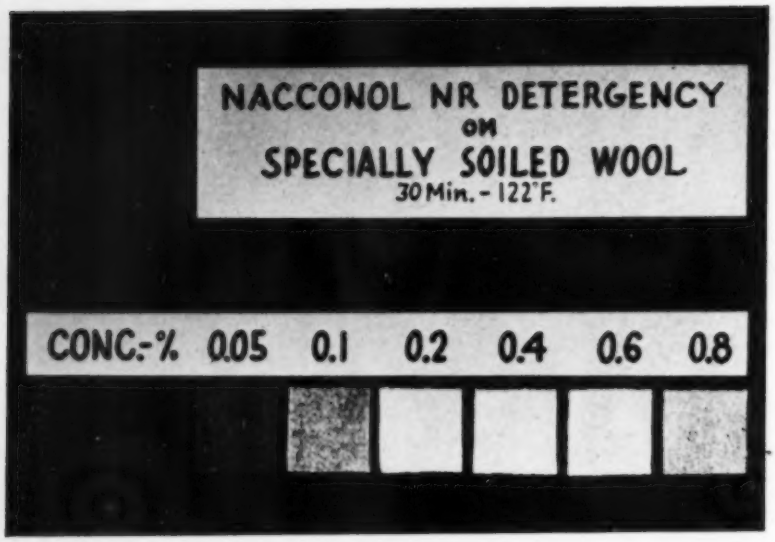


Fig. 4

have their limits. The most successful method of marketing the alkyl aryl sulfonate detergents has been to market them for specific purposes, with adequate directions for their proper use.

It is important that consumers know exactly how to use these synthetic detergents. The usual fault is to use too much. If a man is given a cleaning agent containing a synthetic detergent, he generally tries it out by using too generous an amount. He feels that if he uses enough of the material he can be certain he will see any beneficial effect. Figure 4 shows why the use of a large excess of detergent does not work. In this case, "Nacconol NR" is used for washing an excessively soiled wool. There is substantially no washing at 0.05 per cent concentration. At 0.1 per cent there is very little washing; at 0.2 per cent the wool is washed practically white. The amount of detergent necessary to give a white washing can be tripled without seriously affecting the results. On the other hand, if four times too much is used, very poor results are obtained.

The importance of speed or ease of washing has been discussed above. Other characteristics make the alkyl aryl sulfonate detergents very useful in comparison with soap. The most important of these are summarized here:

(1) The alkyl aryl sulfonates are readily soluble. They dissolve as readily as salt. The solutions do not gel on cooling. These characteristics make it convenient to market the sulfonates either as dry powders or as concentrated solutions.

(2) Alkyl aryl sulfonates are the most stable of the commercially important synthetic detergents. They are effective detergents in alkali or acid and in strong oxidizing or reducing solutions. The effective cleaning action shown by the synthetic detergents in soft water is generally increased in acid solution. The alkyl aryl sulfonates are not precipitated by lime soaps, so they may be used effectively in hard water, in sea water, or with salts of heavy metals.

(3) The alkyl aryl sulfonates are effective cleaning agents in cold water. There is very little difference in the washing power of the synthetic detergents in hot or cold solution.

(4) The alkyl aryl sulfonates are strong deodorants. Soap is a deodorant, too, but when soap is used it is important that no soap residues be left behind. Soap residues are alkaline and irritating. They can become rancid on exposure to the air. The synthetic detergents are neutral and relatively non-irritating, so that a residual film may be left, if desired, to act as a deodorant.

(5) The alkyl aryl sulfonate detergents are strong antibiotics. They are very good bactericides, and exercise some control over mildew, yeast, and insects. An example of the insect-repellent action of the "Nacconols" is shown in Figure V. In this figure, two halves of a porcelain developing tray have been washed separately. One half has been washed with soap, and one half with "Nacconol NR." The top lip of the dish has been greased so that cockroaches cannot escape, and the cockroaches have

(*Turn to Page* 167)

Fig. 5

LIQUID SOAPS from NAPALM

EARLY this year, a report was issued by the Army describing a process by which they converted surplus Napalm into a liquid soap. Napalm, a solid mixture of aluminum soaps, was the material used during the war as a thickening agent for incendiary fuels, and was produced by the nation's leading soap and chemical companies. Quantities of the Napalm have become available as surplus since the end of the war, and a few soap companies, big and small, have experimented lately with its conversion into a suitable soap stock.

The Napalm soap, as first produced by the Army, was considered to have somewhat germicidal properties and was used in Army hospitals and installations for cleaning floors, woodwork, and tile, and for washing dishes, pots and pans, and even cars, trucks, and aircraft parts. Some of it found its way into laundries as a liquid solvent.

When one understands a little about the chemistry of Napalm, it is obvious that its conversion into a soap with reasonably good detergent properties could readily be effected. Napalm is a granular, somewhat rubbery solid, ranging in color from light tan to brown, and has a sweetish odor. It was prepared first by a polymer process and later by a co-precipitation method as an aluminum soap of two parts of coconut oil fatty acids and one part each of oleic acid and naphthenic acid precipitated from a solution of 25 per cent sodium hydroxide by the use of aluminum sulfate crystals. The resulting Napalm was easily solvated and gelled rapidly in gasolene or kerosene to give gels that fitted the needs of the Chemical Warfare Service.

The project of reconverting Napalm to soap was first attempted by the forty-third chemical laboratory company of CWS stationed at Mid-Pacific Army Headquarters near Honolulu in Hawaii under the responsibility of Colonel G. F. Unmacht, Chief Chemical Officer for the Mid-Pacific, with Captain C. F. Hiskey and First Lieutenant W. A. Bishop in direct charge of research and operation, and Tech. Sergeant J. J. Lawson as author of the report. The logical dictates of process efficiency, such as quality and yield control, safety and practicability of operation were affected adversely by the fact that only surplus supplies could be used in all phases of the project and no purchases of materials could be made.

Preliminary experiments on a laboratory scale indicated that the most practical method of reconverting the Napalm suitable to the limitations was by acid hydrolysis:

$$2\ \mathrm{AL}(\mathrm{O{-}C}=\mathrm{O})_2 + 3\ \mathrm{H_2SO_4} = 2\ \mathrm{R{-}C}=\mathrm{O} + \mathrm{Al_2(SO_4)_3} + 3\ \mathrm{H_2O}$$

(OH and R on the left; OH on the right)

It was learned that the reaction would not proceed to completion unless an excess of acid in the order of 10 per cent and above was used. At sulfuric acid concentrations from 15 per cent to 50 per cent, there was a sharp division into an aqueous and a non-aqueous phase. Soon after reaching reflux temperature, some free fatty acid resulted with which the unreacted Napalm formed a tough, rubbery, impervious layer floating on top of the acid, resisting agitation. This rubbery mass was probably in the nature of a dynamic polymer. Some Napalm dissolved in the free fatty acid and coordinated, forming along molecular chains. By refluxing Napalm in slightly acid water, it was determined that an acid catalyzed water hydrolysis under such conditions was unsuccessful. When acid of strength 60 per cent to 70 per cent was used, there was no apparent aqueous layer and with slight heating, the reaction took place quickly. The stronger acid caused some

A process developed in the field by Army Chemical Corps using surplus materials converts excess, gasolene-thickening Napalm into a suitable liquid soap stock.

darkening of the resulting free fatty acids, but the method had the additional advantage of convenience, since it was possible for this reaction to be carried on in an open container without refluxing.

In another experiment, superheated steam was directed over Napalm contained in a glass tube. High purity free fatty acids were contained in the condensate, and alumina was left in the tube. The difficulties involved in construction of an effective steam-hydrolysis reactor of sufficient capacity were insurmountable at that time and design and construction of a small laboratory plant was abandoned.

An autoclave reaction was investigated next. A portion of Napalm and an excess of water were sealed in a bomb and heated to a pressure of 160 pounds per square inch over a period of one and one-half hours. When the vessel had been cooled and opened, a fine emulsion of free fatty acids, alumina, unreacted Napalm, and water was observed. Although these results were encouraging, no further investigation in this direction could be attempted because no autoclave or suitable substitute was available. At this point, it was decided that hydrolysis of the Napalm with strong acid and slight heat was the most feasible method of producing free fatty acids.

THE next undertaking was a semi-plant scale attempt at acid splitting. Using a ceramic crock of twenty-gallon capacity, fifty pounds of Napalm per batch were mixed with a measured amount of water. After it was stirred with a wooden paddle, 94 per cent sulfuric acid was added in the quantity that would result in a 10 per cent excess of 65 per cent sulfuric acid. The resulting heat of dilution proved almost enough to drive the reaction to completion. This was finally completed by adding ten pounds of water and bubbling live steam through the mixture for twenty minutes. The water layer, containing aluminum sulfate and spent acid, was then drained off (free fatty acids have a density of about (0.9) and the free fatty acid layer was washed twice. If the free fatty acids were washed with cold water, an emulsion formed that could be broken only with difficulty. One method used was to shake the emulsion with brine. Another was to heat the emulsion. To avoid emulsions, the free fatty acids were washed with hot water only, and were pumped only when hot. After experimentation, this method was found most suitable allowing a yield close to theoretical, and it was decided to design the plant on this basis.

Tests showed that the washed free fatty acids prepared by this method had an acid number of about 220. When distilled, these fatty acids produced an amber, high quality soap, but of course, distillation of the acids was not practicable on this project. Potassium and sodium soaps of various strengths were made under a variety of conditions. Carbonate neutralization of the acids was also tried. After two dozen kinds of liquid soap had been made and tested, the following was chosen as most satisfactory: a slightly alkaline (pH of about 9) sodium soap made at room temperature by adding free fatty acids to sodium hydroxide solution with stirring. This soap consisted of about 28 per cent solids in solution. It lathered easily and pleasantly, and had a faint odor which was not objectionable. After aging for a number of days, a light sediment formed which was easily removed, resulting in a clear brown product. When laboratory work had been completed, the soap-making process from start to finish consisted of the following procedure:

(1) Napalm and water were mixed in measured proportions.

(2) Concentrated sulfuric acid was then stirred in and the hydrolysis proceeded, enhanced by the heat of dilution.

(3) After one hour's time, the mass was diluted with hot water and live steam was bubbled in for one and one-half hours. It was then left to stratify.

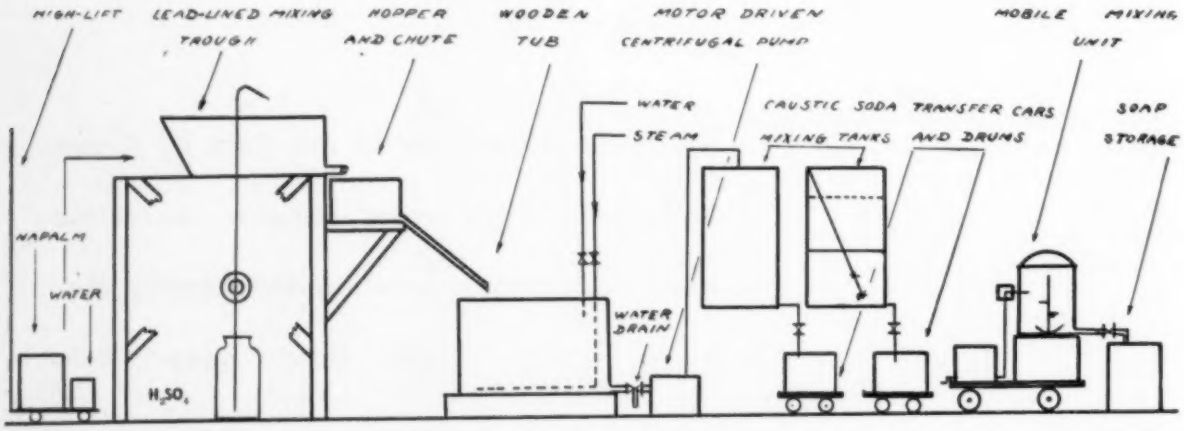
(4) The water layer was drained off, taking with it aluminum sulfate and spent acid.

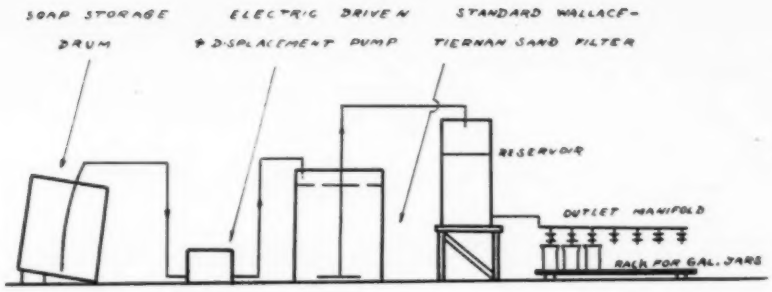
(5) The free fatty acids layer was washed with two successive portions of hot water.

(6) While hot, the free fatty acids were pumped to a settling vessel where all remaining water was drained off after prolonged standing.

(7) A certain amount of free fatty acids was run with stirring into a solution of sodium hydroxide of measured strength and quantity.

(8) After standing a few days, the soap was run through a sand filter to remove sediment.





THE plant was set up in an unused portion of an impregnation plant with a high roof and ample floor space. A wooden platform, ten feet wide, fourteen feet long, and ten feet high was constructed to hold a large lead-lined trough. Here, for one batch, one thousand pounds (eight drums) of Napalm and one hundred fifty-five pounds of water were mixed with three hundred sixty pounds (two carboys) of 93 per cent sulfuric acid. The Napalm and water were lifted up to the trough in drums by means of a high-lift truck. The acid was pumped from the carboys (on the ground) by a positive-displacement hand pump. The actual mixing was performed by hand with hoes. Some labor was obtained from the Japanese prisoner of war camp.

After about one hour of mixing, a gate in the end of the trough was lifted and the mix was run into a hopper, down a chute and into one of four 500-gallon red cedar tubs partly filled with hot water. Then live steam was bubbled into the mix in the tub through a perforated cross until no more unreacted Napalm appeared on the surface of the liquid. (The steam source was the boiler of a non-operating impregnation plant.) The spent acid and aluminum sulfate were then run to the sewer and hot water was added to the free fatty acids for the first wash. Steam was bubbled in again to agitate the mixture. After settling, the wash water was drained off and the process was repeated. A motor-driven centrifugal pump of sixty gallons per minute capacity transferred the resulting eight hundred fifty pounds of free fatty acids to the settling tanks, which consisted of five 110-gallon tanks made by welding together fifty-five gallon Napalm drums end-to-end and open at the top. After an interval of about ten to fifteen hours, all the accumulated water was drained from the free fatty acids.

Caustic mixing tanks were made of Napalm drums with agitation supplied by compressed-air driven paint stirrers. In these tanks, ninety-five pounds (NaOH basis) of sodium hydroxide were dissolved in forty gallons of water and run into a drum mounted on a dolly. It was then wheeled to a "mobile-mixer" and blown into the mixing tank with compressed air. A "mobile-mixer" is a portable mixing arrangement used for mixing Napalm with gasoline to prepare incendiary solutions for servicing flamethrowers in a forward area.

The caustic solution in the mixer was then diluted with two hundred and eighty-five gallons of water. Then six hundred pounds (eighty gallons) of free fatty acids were blown into the tank by compressed air while stirring the mixture constantly. The measured amount of free fatty acids were brought to the tank in a drum mounted on a dolly just as was the caustic. After stirring for a half hour, a sample was taken to the laboratory for a pH determination. If it lay between 8.5 and 10.0, a batch was considered satisfactory and it was then pumped into drums. The batch produced three thousand four hundred pounds of liquid soap. The soap was subsequently filtered through a sand filter to remove the sediment and was finally bottled.

The acid used in the hydrolysis was made from surplus "FS Mixture," a smoke mixture formerly used to screen troops on beachhead operations, by utilizing another surplus, silica gel, and extracting the acid by a simple contact process.

By this process, Napalm was converted into a little over four times its weight of liquid soap. This final product was a black liquid with a tar-soap like odor, and could very likely be reduced to a solid soap.

Napalm is packed in steel containers of about 25 pounds capacity, and in strong fiber containers holding from 55 to 100 pounds. It should sell for around 10 or 12 cents a pound. Inquiries into the availability of Napalm at present reveal that the Army has turned over most of its surplus stock to War Assets Administration. Inquiries should be made to the regional offices of WAA. Salvage dealers in the mid-west have purchased considerable quantities of Napalm from WAA, one such company, Tucker Salvage and Surplus Corporation, Station D, Box 319, Cleveland, has reported a stock of a million pounds of Napalm in 100-pound drums. No price quotation could be obtained. From an unconfirmed report, it appears that there are still about 100,000 pounds of Napalm in the New York area at WAA disposal center No. 9, in Linden, New Jeresy.

At the Birmingham regional office of WAA there was a stock, on November 15th, of about 4000 pounds of Napalm in 5-pound cans, another 8600 pounds in 20-pound cans, and over 140,000 pounds in steel drums. There is also a report that some Napalm is located at the WAA disposal center No. 5 in the Bronx, New York City.

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The theory that color will return to decolorized palm oil due to oxidation was investigated. Recolorization of palm oil and the reversibility of oxidation of carotene do not occur to a significant extent. P. Dubouloz and S. Lalement. *Bull. matieres inst. colonial Marseille 29,* 35-8; through *Chem. Abs.*

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Laboratory and semi-plant scale experiments indicate that high quality edible lard and beef fat may be produced by an alkali-rendering semi-continuous process. F. E. Deatherage. *Oil & Soap 23,* 327-31 (1946).

Chemicals

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THERE'S no substitute for the word experience. It's well to bear in mind that Turner has been supplying chemicals to the process industries for over 75 years. Call on us the next time you're in the market and you'll be quick to say that Turner is *"long on quality and strong on service."*

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TRADE NEWS. . . .

Potash Soap Assn. Offices

Potash Soap Association has opened temporary offices in New York at Office Suite No. 216, Hotel St. George, Brooklyn, N. Y. The Association also has an office in the Hibbs Building, 723 15th St., Washington, D. C. At the present time, Andrew Federline, secretary, is making his headquarters at the Brooklyn offices of the Association.

Synthetic Soap Advances

A recent prediction that synthetic soaps made from oil or natural gas would take over 25 per cent of the soap market within the next few years was made by Robert P. Russell, president of Standard Oil Development Co., New York. Production of one-quarter of the nation's soap needs, he explained, would require only about one-hundredth of present known natural gas reserves.

S. & S. Soap Co. Fire

S. & S. Soap Co., New York manufacturers of soap powders, detergents and allied products, suffered an estimated $30,000 damage in a fire on Nov. 18 which demolished part of the factory. The company has announced that it will endeavor to resume production as soon as possible.

P. & G. Advances McElroy

Neil H. McElroy, vice-president and assistant to the president of Procter & Gamble Co., Cincinnati, has been named vice-president and general manager by the P. & G. board of directors at its annual meeting, the company announced recently. A native of Berea, O., Mr. McElroy joined P. & G. in 1925 following his graduation from Harvard. He became manager of the promotion department in 1929, and was named manager of advertising and promotion in 1940. In 1943, he was elected to the board of directors and named vice-president in charge of advertising and promotion. In March, 1946, he was appointed assistant to

NEIL H. McELROY

Richard R. Deupree, president of Procter & Gamble. Mr. McElroy is 42 years old. Mr. Deupree was recently named executive chairman of the Army and Navy Munitions Board.

Canada Lever Vets Reunion

The annual reunion dinner of Lever Bros., Canada, Ex-Service Men's Association was held this year in the King Edward Hotel, Toronto. Guest speakers included F. Berry, C. A. Massey, president of the company, B. Jackson, and K. Howard. B. Petts, president of the association, acted as chairman.

Soap Meeting Dates

The date for the annual meeting of the Association of American Soap and Glycerine Producers has been changed from January 15th to January 22nd. The meeting will be held at the Waldorf-Astoria, New York. The first annual meeting of the new Potash Soap Association will be held at the Hotel Cleveland, Cleveland, January 14th. It had originally been planned to hold the two meetings on succeeding days in New York.

Lever Honors Employee

Thirty-eight members of the staff of Lever Brothers Company, Cambridge, who have been with the organization for 25 years, and nearly 800 who have completed their fifteenth year of employment, were the principal guests of honor at dinners held simultaneously in Boston, Chicago, Baltimore and St. Louis on November 25th.

Those entering the Lever Quarter Century Club were presented with emblem pins and $100 U. S. savings bonds, and members of the fifteen-year group received gold watches. Guests at Lever dinners were linked together via radio when a portion of the talk which Charles Luckman, president of the company, made at the dinner in Boston for employees of the Cambridge plant was broadcast between acts two and three of the Lux Radio Theatre presentation that evening.

Two Turco Appointments

Appointments of L. H. Moulton to the post of national sales director and D. T. Buist as his assistant were announced early this month by Turco Products, Inc., Los Angeles. Mr. Moulton, a graduate of Colorado College of Agriculture, joined the firm in 1931. For the past eight years he has directed Turco's eastern division from the Chicago plant office. Mr. Buist joined the company in 1936. He was appointed district sales manager in 1943 and western zone sales manager in 1944.

P & G Executives

Howard J. Morgens has just been appointed manager of the advertising department of Procter & Gamble Co. W. Rowell Chase has been named manager of the brand development division of that department, and A. N. Halverstadt has been named manager of the radio and media division.

Ungerer Dedicates Plant

Ungerer & Co., New York, dedicated their new plant at Totowa, N. J. at a cornerstone laying ceremony held

Fred H. Ungerer

November 22. The new factory covering eight acres at Totowa comprises seven buildings, four for manufacturing operations, large warehouse with siding, office building, and power plant. Fred H. Ungerer, president of the company, officiated at the laying of the cornerstone, the ceremonies being attended by 75 Ungerer employes. H. B. Moore, vice-president, made the arrangements. Following the ceremony, a cocktail party and dinner was held for those who attended during which Mr. Ungerer distributed 1946 bonus checks. The new factory which will produce basic perfuming and flavoring materials recently began manufacturing operations on some of the Ungerer specialties.

Ultra Chemical Expands

The Paterson, New Jersey plant of Ultra Chemical Works, Inc., is now being enlarged according to a recent announcement by that company. Several new buildings have already been erected, and others are now in the process of construction. An outstanding feature of the newly completed detergents division building is a large spray dryer, six stories high. In addition to producing detergents for the soap and sanitary chemical field, Ultra Chemical Works, Inc., are makers of "Ultragloss," "Star Brand," and private label packaged goods, including no-rubbing floor waxes, rug and upholstery cleaners, venetian blind cleaners, paste waxes, etc. Other buildings in the Paterson plant will house administrative offices and new laboratories. When completed according to plans, the entire new plant will occupy an area of 50,000 square feet.

Synthetic Detergent Bar

A synthetic detergent in bar form will soon be available for toilet use, according to a Chicago newspaper. The authority quoted is Procter Thomson, chemical engineer with Procter & Gamble Co., who was interviewed during the recent meeting of the American Oil Chemists Society in Chicago. Thomson was reported to have stated that the new synthetic soap bar has been "given a clean bill of health by the Navy" but that difficulties had been encountered in making a bar which will hold its firm shape. Thousands of experimental bars were turned out, but all became soft and spongy. However, the problem is now being solved, said Mr. Thomson.

Conti Sponsors Radio Show

Conti Products Corp., Brooklyn, became sponsor of "Radio's Treasure Hour of Song," when it returned to the air November 21st over 166 Mutual stations. A new feature of the program is a contest in which listeners are asked to identify an unnamed popular song together with the original classical theme upon which the modern selection is based. From among the most accurate and interesting letters received, a contestant is selected each week as winner, and travels to New York with a companion to spend three days as guests of the Conti Products Corp.

Newell-Gutradt Sales Mgr.

R. O. Fost has been appointed general sales manager for Newell Gutradt Company, San Francisco, manufacturers of granulated soaps and other products, it was announced November 18. Mr. Fost formerly was assistant to Frank Pigeon, division manager of Lever Brothers Company.

New Oronite Sales Manager

Appointment of H. E. Bramston-Cook as general sales manager of Oronite Chemical Co., San Francisco,

H. E. Bramston-Cook

Standard of California chemical subsidiary, was announced last month. Bramston-Cook, who served in the Navy as a line captain, is well known in the oil industry for his activities in development and distribution of high solvency naphthas and as manager of technical products sales for Union Oil Co., Los Angeles. A native of England, he was brought to Canada's Northwest Territory in 1903 and served in the first world war as a pilot officer in the Canadian Royal Air Force. He left Union Oil Co. for active duty in the Navy in 1941.

Boost Salvaged Fat Price

Chicago meat dealers in mid-November began offering housewives 10 cents a pound for used kitchen fats, while some Chicago chain stores were paying 12 cents to encourage maximum collection of waste fats for soap production. Darling & Co., Chicago's largest rendering concern, and other rendering companies were reported paying the dealers 13 cents for the salvaged products.

Jonathan Wrisley Arrives

Jonathan David Wrisley was born November 26th. He is the grandson of George Wrisley of Allen B. Wrisley and son of George Wrisley, Jr., who is connected with the Wrisley Company.

The importance

OF USING NIAGARA CAUSTIC POTASH, CARBONATE OF POTASH, CAUSTIC SODA AND LIQUID CHLORINE

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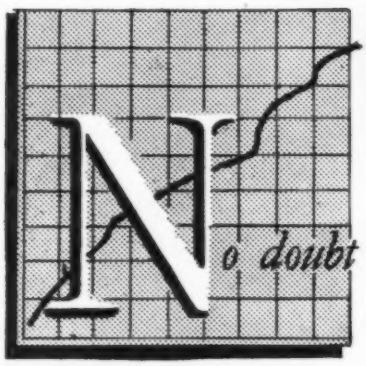
FOR FATTY ACIDS AND THEIR DERIVATIVES THE TREND IS TO HARDESTY



No doubt about it! The trend to HARDESTY for fatty acids and their derivatives started when our first shipment was made. It was accentuated during the war when HARDESTY provided many answers to problems created by shortages of imported raw materials. And even now, many manufacturers who followed the trend to HARDESTY simply as a war time expedient have decided — on the basis of superior performance for less cost — *never* to go back to high priced imports.

There's a reason behind this trend to HARDESTY—above and beyond HARDESTY'S dependable quality fatty acids • HARDESTY'S research laboratory and technical service department are constantly demonstrating to manufacturers how they can save money by first consulting HARDESTY on a new problem.

HARDESTY products are made in various grades to meet the requirements of the chemical, cosmetic, soap, rubber and other industries. At present it is impossible to render the traditional Hardesty Prompt Service but if you have a problem, our knowledge and experience in fatty acids and their derivatives are ready to go to work for you. We can show you with information and samples why it pays TO KEEP IN TOUCH WITH HARDESTY.

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ALCOHOLS C-8, C-10, C-12
PARA CRESOL METHYL ETHER
We wish you a Merry Christmas
We wish you a Merry Christmas
We wish you a Merry Christmas
...AND A PROSPEROUS NEW YEAR!
And these are just a few of the many fine products developed through chemical research to make holidays — and every day — happier. E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Aromatics Section, Wilmington 98, Del. Branch Offices: Boston, Charlotte, Chicago, New York, Philadelphia, Providence, San Francisco.
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Reilly, Luckman Address Grocers

THE prediction of more soap after Jan. 1 and a "nearly normal" supply by the end of 1947 greatly cheered

CHARLES LUCKMAN

JAMES A. REILLY

"soap-hungry" grocers in attendance at the meeting of the Super Market Institute in Chicago last month. The forecast was made by James A. Reilly, vice president of Colgate-Palmolive-Peet Co., Jersey City, N. J., during a luncheon symposium on the supply situation in the food store field. Because he was detained in Washington by the then pending decontrol activities, Mr. Reilly's paper was read by an associate. After explaining the reasons for the acute shortage of soaps, Mr. Reilly pointed out that the improved livestock situation and increases in cocoanut oil imports, as well as the growing production of synthetic detergents, all forecast more soap and cleaning compounds in the near future.

Charles Luckman, president of Lever Bros. Co., Cambridge, Mass., in another address, warned against complacency because of the Republican landslide Nov. 5 and a possible resumption of the "historically negative" attitude of business toward social reform. While American business now has a "favorable government climate," Mr. Luckman asserted that industrialists must show a "thoughtful, constructive concern for the hazards and problems which exist in the lives of our American wage earners." He suggested attention to minimum wage legislation, bigger educational appropriations, stabilized employment and more liberal pension plans.

Mr. Luckman commented on the fact that 30 years ago the average wage at the Lever Bros. plant was 21c an hour. It has now increased to $1.11 while the work week has shrunk from 50 to 40 hours. He predicted a further increasing level of wages and predicted that by 1970 we would have in the United States a standard of living at least 100 per cent higher than the level of today.

Synthetic detergents were much in evidence among the displays in the Stevens Hotel's huge exposition hall. F. R. Corp., New York, displayed "Scoop," which has been heavily advertised in the east for sixteen months. Now that raw materials are becoming more readily available, the company is planning to expand its promotion nationwide, Irving Silverstein, assistant advertising manager, stated.

"O-D Wonder Wash," another synthetic, manufactured at Tuckahoe, N. Y., by the O-D Chemical Co., is also soon to be promoted nationally, according to M. E. Wakeler, of Universal Sales Service Associates, New York, the distributing agency which displayed the product.

Procter & Gamble Co., Cincinnati, centered attention in their booth on "Spic and Span," general purpose synthetic cleaner, but also invited attention to their numerous other products. Mark Upson, sales manager, in charge.

Colgate-Palmolive-Peet Co., Jersey City, N. J., stressed their "Vel" synthetic cleaner, but dressed up their booth with packages of "Supersuds" and a generous showing of Palmolive toilet soap. Serving as hosts were Andrew A. Lynn, merchandising manager, from Jersey City, and P. J. Schatz, Chicago sales supervisor.

At the Lever Bros. Co. booth visitors were offered an opportunity to consult with Russ Maintain, noted authority on store layout engineering, who demonstrated with a set of miniature models the newest ideas for arranging supermarket store fixtures.

Prominent in the display of the Allen B. Wrisley Co., Chicago, were cartons of "Puppy Suds" laundry flakes, which R. E. Hodges, district sales manager, said, is being re-introduced after an enforced absence. Also shown were "Olivilo" and other Wrisley products.

Boyle-Midway, Inc., designed their booth to represent a model household sanitary supply department for a Supermarket store. Here were shown "Aero" wax, "Old English" wax, "Black Flag" and "Fly-Ded" insect sprays, "Moth-Ded," and other products from the company's extensive line of household sanitation items. L. G. Feiertag, vice president in charge of eastern sales, directed the presentation.

Oakite Products, Inc., New York, presented their mass display service which is said to be making striking sales records wherever applied. Photographs were shown of one exhibit of 17,000 boxes of "Oakite" cleaner, weighing 5 tons, currently installed in a Chicago chain grocery. This display, according to Preston Levy, company representative, sold more "Oakite" in one week than this

(*Turn to Page* 167)

For this, and every other Christmas . . . One World

Florasynth LABORATORIES, INC.
CHICAGO 6 • NEW YORK 61 • LOS ANGELES 13

DALLAS 1 • DETROIT 2 • MEMPHIS 1 • NEW ORLEANS 13
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Florasynth Labs. (Canada) Ltd.—Montreal • Toronto • Vancouver • Winnipeg
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Griffin Appoints Wilde

Griffin Chemical Company, San Francisco, last month announced the appointment of T. E. Wilde to the

T. E. WILDE

company's technical service and process development staff. Wilde, a graduate in chemistry from Stanford University, for the past 15 years has acted in various capacities for technical departments of the Union Oil Company, most recently as assistant to the manager of the chemical products division in Los Angeles. He also served in the manufacturing department at Union Oil and at one time was head of the company's control laboratory at Oleum.

Canada Soap Still Short

It will be at least two months before Canadian housewives may expect the soap lineups to disappear, but for 1947 the Wartime Prices and Trade Board officials have set their sights on a goal of 219,000,000 pounds soap production in Canada. Board officials said that compared with the 200,000,000 pounds turned out in 1946, the 1947 estimate appears healthy but it does not mean there will be any surplus.

Canada's increased population, her present depleted soap stocks, and the fact that more laundries are now operating in the country than did six years ago will all mean that supplies will have to be stretched, said F. H. Lehberg, oil and fats administrator for the Prices Board. In addition, the Dominion's crowded hospitals are using more soap of all kinds, and the increased number of industrial workers need more. The Prices Board has been urging manufacturers to produce bar soap, which does not require as much soda ash as powdered soap.

New Soda Ash Plant

According to an announcement November 22nd by American Potash & Chemical Co., New York, construction of a new plant at Trona, California for the production of 60,000 tons of soda ash and 30,000 tons refined borax annually was scheduled to start early in 1947. The expansion will cost $4,500,000. In 1945, the company produced 82,000 tons of soda ash and more than 98,000 tons of borax. The new plant, when completed, will increase soda ash capacity by nearly 75 per cent. Borax production will be increased by more than 30 per cent. Secondary brine from Searles Lake, the commercial use of which substantially increases the raw material reserves of the company, will be processed for the first time in the new plant. The new carbonation plant will enable the company to keep pace with rapidly expanding western industry.

New Hand Cleaner

The development of a new hand cleaner was recently announced by Tudor Chemical Specialties, Inc., New York. The new product, known as "Quickee," uses neither soap nor water and is fortified with lanolin as well as with vegetable oils. The cleaner is claimed to be useful for removing grease, paint, oil, printers ink, glue, tar, flooring compounds, and vegetable stains and helps to prevent chapped hands.

Monsanto Cleveland Office

Monsanto Chemical Company, St. Louis, announced the opening December 1 of a sales office in the Keith Building, Cleveland, O., to serve the greater Cleveland area. Robert H. Baugh will supervise the office and represent Monsanto's phosphate division sales in the area. T. C. Tupper will represent the company's organic chemicals division, and R. T. Clark the Merrimac division.

Westfried Joins Gunning

Gunning and Gunning, Inc., New York, have announced the appointment of Ernest A. Westfried to an

ERNEST A. WESTFRIED

executive position with the company. Mr. Westfried has been associated with the aromatic chemical, oil, and essential oil industries here and abroad for over 25 years. Gunning and Gunning, organized in 1922 by Nelson A. Gunning, recently opened an essential oil department which is an addition to the aromatic and compounding departments established several years ago. The company does its own manufacturing in a plant at Newark, N. J.

Addresses Chi. Employers

Procter & Gamble Co.'s stabilized employment plan was explained to the Employers Association of Chicago by Wm. G. Werner, P. & G. public relations director, last month. P. & G. does not guarantee a fixed annual wage, but does guarantee 48 weeks of employment a year, Mr. Werner explained. No permanent employee has been laid off since 1924, he said. Every business which produces goods that are consumed evenly, he suggested, should look carefully at the possibilities for such a stabilized employment plan.

Smile Soap Plant Addition

Smile Soap Co., Los Angeles, has announced that CPA approval has been obtained for construction of a $4800 steel canopy as an addition to their plant.

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Better Soaps

Better Sales

Certainly you can saponify fats and oils with Caustic Soda. SOLVAY sells a very high grade. But manufacturers who want premium profits from quality products—liquid shampoo, shaving cream, tooth paste, liquid soap—specify SOLVAY Caustic Potash. It's a *suds*-maker . . . and a *sales*-maker.

If you are not now using SOLVAY Caustic Potash, try it . . . and check your sales results. Our Technical Staff is always ready to give you helpful service on your problems. Check these 4 reasons for buying Solvay Caustic Potash:

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SOLVAY

Givaudan Personnel Notes

Ernest R. Durrer was elected executive vice-president and member of the board of directors of Givaudan-Delawanna, Inc., and Burton T. Bush, Inc., at a meeting of the board held recently in New York. Mr. Durrer, a native of Switzerland, was in the Far East at the outbreak of the war and returned to the United States with several associates from Geneva to organize and direct the newly-formed Givaudan-Foreign, Inc., of which he became vice-president. In joining the board of directors, Mr. Durrer becomes the fourth member to be added this year.

Colonel Herbert L. Shaftoe, manager of the Cincinnati office of Givaudan-Delawanna, Inc., has returned to his position with the company after over six years in the Army. Upon his return from overseas after the first world war, he joined the Givaudan organization and was sent to Cincinnati to form the branch office which he headed until the outbreak of the recent war. In 1940, he assisted in the organization of the

Col. Shaftoe

E. R. Durrer

Military Mission Branch of the War Department General Staff which acted as advisor to allied governments. He was sent to North Africa to join the Fifth Army in 1944 and went to England later, remaining with the First Army throughout the European campaign. He later served in the Pacific campaign, becoming advisor to General Valdis, Chief of Staff of the Philippine Army and was assigned to General Headquarters as Chief of the Guerrila Affairs Branch of the Philippine Army Division.

Wants Soap Factory

According to a report from the Florida State Chamber of Commerce, Lake Wales, Fla. needs a soap factory. Lake Wales is in the geographic center of the peninsula and is linked with important Florida centers by main highways. A soap plant using waste fats from slaughtering plants within a hundred miles radius could be serviced by trucks picking up raw materials and delivering finished products on the same trip. The main line of the Seaboard Railway from New York to Miami passes through Lake Wales as does the Atlantic Coast line. There are few soap factories in Florida.

Ardmore Chemical Formed

Organization of Ardmore Chemical Co. by a group of Columbus, O., business men, to engage in the production and distribution of liquid starch, soaps, detergents and cleansers, was recently announced. Officers of the new firm are: President, Daniel W. Hessler; vice-president and treasurer, Charles R. Kirk; and secretary, Daniel A. Carmichael, Jr. It was announced that, for the present, the company's products will be manufactured by Hessler Laboratories, Inc., Columbus, at a plant in Commercial Point.

New Shave Sets for Men

House of Gourielli, New York, have announced the release of two new shave gift sets for men. The shave soap mug and after shave lotion set will sell for $3.50, and the combination set of shave mug, after shave lotion, "Tang" talc, and "Verbena" soap are packaged in a box selling for $6.50.

Colgate Advances Emery

Charles Emery, San Francisco toilet articles manager for Colgate-Palmolive-Peet Company, was recently advanced to the home office merchandising department in Jersey City. Mr. Emery started with the company in 1922 and later was transferred to the toilet articles sales department, becoming Honolulu district sales manager in 1937. In 1943, he was transferred to Seattle and last year took over the district managership of the department's San Francisco office.

Soap Packaging Seminar

A special packaging seminar on soap will feature the eighth annual meeting of the Packaging Institute, Hotel Stevens, Chicago, November 25 and 26th. According to A. J. Caldwell, Lightfoot Schultz Co., chairman of the soap division of the Institute, in charge of this program, the latest techniques in packaging procedure, materials and machinery will make up the seminar. Serving in Mr. Caldwell's division are C. E. Carlson, Colgate-Palmolive-Peet Co., New York, E. P. Huisking, Conti Products Corp., Brooklyn, J. J. Guiney, Lever Bros. Co., Cambridge and W. L. Romney, Procter & Gamble Co., Cincinnati.

TGA Meetings

A meeting of the scientific section of the Toilet Goods Association was held December 5th at the Waldorf-Astoria, New York. Among the papers of interest to the soap industry was one on: "Special Problems in Multiple Patch Testing of Soaps," by Robert Schwartz and Emanuel J. Marcus, New York Dermatological Laboratories.

At the meeting of the board of directors of the Association held in October, it was voted to offer associate members facilities for displaying their products at the annual convention should they be interested. Such a proposal will not be carried out this year however, for the response to a questionnaire on this subject was not favorable.

The Association plans to hold its spring meeting May 14, 15, and 16 at the Waldorf-Astoria in New York.

New Office for Malmstrom

N. I. Malmstrom & Co., Brooklyn, have announced the opening of a new office and warehouse at 30 West Washington St., Chicago 2, Illinois. Full stock of its new odorless and pale color lanolin as well as other grades of wool fat will be carried at this new office, says the company, in order to provide faster shipments from a more centrally located outlet.

SEASON'S GREETINGS

To our many friends
we extend best wishes
for Christmas and the
New Year

GEORGE LUEDERS & CO.

427-29 WASHINGTON STREET NEW YORK 13, N. Y.

Branches: Chicago, San Francisco, Montreal

REPRESENTATIVES: Los Angeles, Philadelphia, St. Louis, Toronto, Canada, Winnipeg, Canada, Waukesha, Wisc.

One of America's Pioneer Importers and Manufacturers of Essential Oils and Aromatics

NEW TRADE MARKS

The following trade-marks were published in the November issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Mark Applications

STYLIS—This in upper and lowcase, underlined letters for detergent preparation for use in bathing and washing parts of the human body. Filed Dec. 18, 1944 by Colonial Laboratories, Kansas City, Mo. Claims use since 1939.

TROJAN—This in upper case, bold letters, the fanciful drawing of a man astride a large bird between the letters "o" and "j" for hand soap polish for refinishing and cleansing metal, wood and other surfaces, metal polish, carpet and upholstery shampoo in liquid form, dishwashing compound, porcelain and enamel cleaning preparation. Filed May 23, 1945 by Diversey Corp., Chicago. Claims use on hand soap, polish for refinishing and cleansing metal, wood and other surfaces, metal polish, dishwashing compound and porcelain and enamel cleaning preparation since Oct., 1923; and on carpet and upholstery shampoo since Jan. 1930.

PROTOL—This in upper case, bold letters for wetting agent and cleanser. Filed Dec. 28, 1945 by John T. Stanley Co., New York. Claims use since June 11, 1945.

POTSAN PANSEN—This in upper case, bold letters, one word above the other for household cleanser. Filed Jan. 29, 1946 by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since Jan. 25, 1946.

AJAX—This in upper case, extra bold, black letters for soap and household cleanser. Filed Jan. 29, 1946 by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since 1904 on soap and since Jan. 22, 1946 on cleanser.

WILLIWAW—This in upper case letters for preparation for cleaning and protecting the skin. Filed Feb. 2, 1946 by Saponified Products Co., Oakland, Calif. Claims use since July, 1945.

REJAY—This in upper case, extra bold letters for soap. Filed Feb. 9, 1946 by Zitomer Chemists, Inc., New York. Claims use since Jan., 1936.

STERISOL—This in upper case, bold letters for chemical disinfectant, deodorant and germicidal material for general utility. Filed Oct. 31, 1944 by Lystad & Redick, Inc., East Grand Forks, Minn. Claims use since Mar. 21, 1946.

SKIP-ODO—This in upper case letters for room deodorants. Filed Dec. 12, 1945 by Marcel Leduc, Rochester, N. Y. Claims use since Dec. 5, 1945.

The line drawing of a bow and arrow pointing upwards at a planet for insecticides and insect sprays of the residual and contact types. Filed Apr. 11, 1946 by Dorsett-Jones, Inc., Baltimore, Md. Claims use since Feb. 27, 1946.

GENITOX—This in upper case, bold letters for insecticides. Filed April 11, 1946 by General Chemical Co., New York. Claims use since Mar. 4, 1946.

MAGIC INKSTICK—This in upper case, open letters, one word above the other, for cleaning sticks made of a detergent material for clothing and the like. Filed June 10, 1944 by Nu-Pro Manufacturing Co., St. Louis. Claims use since May 1, 1944.

KILLER DILLER—This in upper case, medium letters, one word above the other for insecticides. Filed June 8, 1944 by Killer Diller Corp., Milwaukee. Claims use since Apr. 13, 1944.

PIED-PIPER—This in upper case, bold letters above the fanciful drawing of the story-book character of that name for rat and mice exterminator in powdered form. Filed Nov. 15, 1945 by The De Pree Co., Holland, Mich. Claims use since Mar. 1, 1945.

KACECO FUME-O-DEATH INSECTICIDE—This in upper case, bold letters for insecticides. Filed Dec. 3, 1945 by Knox Chemical Co., Chicago.

RAINBOW BUBBLES—This in upper case bold and upper and lower case medium letters within a rectangular mortise that is part of a drawing of sky, bubbles, a rainbow and a cherubic face blowing the bubbles for chemical solution for producing bubbles. Filed Feb. 21, 1946 by Novelty Manufacturing & Sales Corp., Charlotte, N. C. Claims use since Feb. 13, 1946.

DIXO—This in upper case, extra large extra bold letters for insecticide, disinfectant and deodorant. Filed Mar. 18, 1946 by Hygienic Sanitation Co., Philadelphia. Claims use since July 1, 1923.

RUB-A-DUB-DUB—This in upper and lower case, bold letters for bubble bath preparation. Filed Mar. 18, 1946 by Stephen E. Riley Co., Los Angeles. Claims use since Oct. 15, 1945.

RESIDOL — This in upper case, bold stencil letters for insecticide. Filed Apr. 15, 1946 by Shell Oil Co., San Francisco. Claims use since Mar. 8, 1946.

CHEN-YU—This in upper case, bold letters for soaps, liquid and flake form. Filed Aug. 22, 1945 by Associated Products, Inc., Chicago. Claims use since July 17, 1945.

STYNAMITE—This in upper case, bold letters for liquid chemical cleaning preparation for general cleaning uses. Filed Nov. 30, 1945 by Chemical Industries and Stynamite Co., San Francisco, Nov. 30, 1945. Claims use since Feb. 1, 1940.

C. P. X. — This in upper case, open letters above a circle in which appears the drawing of a pair of shoes that are upside down, for liquid shampoo preparation for cleaning the interior of shoes. Filed Dec. 13, 1945 by C. P. X. Products Co., Waterbury, Conn. Claims use since Nov. 3, 1945.

PARK & TILFORD—This in upper case, bold letters for toilet soaps. Filed Jan. 25, 1946 by Park & Tilford, New York. Claims use since 1936.

MASK YOUR SPRAY ODORS

ECONOMICALLY • EFFECTIVELY •

Here listed are some of the odor masks and low cost perfumes we have developed for use in insecticide sprays and powders. Write us for complete details—descriptions, applications, prices . . . or better still, let us work with you in producing a deodorant or fragrance made to **your individual** likes and specifications.

ODOR MASKS—FROM $1.00 TO $3.00 PER LB.

BOUQUET #149
A vanilla type odor mask.

BOUQUET #363
Odor neutralizing agent made especially for sprays containing Thanite. This imparts a bouquet effect, slightly oriental.

BOUQUET #364
A floral bouquet effect for Thanite sprays.

CARNATION #26
A pleasant carnation flower type; spicy.

CEDAR PINE #50
Refreshing cedar-pine type; very strong, pungent.

CEDAR PINE #51
Same as above, but slightly lower priced.

CLOVER #7
A sweet clover type.

DEODORANT #10
This product has a neutralizing effect.

DEODORANT #11
Strong vanilla odor.

DEODORANT #61
A clean, neutral effect for Thanite sprays.

DEODORANT #62
A technical bouquet, possessing clean, refreshing, lasting odor and providing good coverage.

DEODORANT #63
Strong, pungent odor; provides excellent coverage.

DEODORANT #64
This is extremely lasting and provides powerful coverage.

DEODORANT #65
Long lasting; excellent coverage.

DEODORANT #66
Powerful, long lasting coverage.

DEODORANT #67
Strong deodorant, neutral effect with good coverage.

DEODORANT #68
Strong deodorant, violet effect with good coverage.

DEODORANT #69
Strong, powerful masking qualities.

DEODORANT #70
Effective masking agent; strong and powerful.

DEODORANT #71
Extremely lasting and heat resistant.

HAY #9
Powerful, pungent character of new mown hay; good coverage.

PINE #49
Pleasant, refreshing pine type; fleeting; good coverage.

VIOLET #22
Imparts a distinct and characteristic note.

. . . AND MANY OTHERS, FROM $1.00 UP.

FRITZSCHE BROTHERS, Inc.
PORT AUTHORITY COMMERCE BLDG., 76 NINTH AVENUE, NEW YORK 11, N.Y.
BRANCH STOCKS
BOSTON CHICAGO LOS ANGELES ST. LOUIS TORONTO, CANADA , MEXICO, D. F.
FACTORIES AT CLIFTON, N. J. AND GRASSE, (A.M.) FRANCE

VOO-DOO—This in upper case, extra black, bold letters for toilet soaps. Filed Feb. 2, 1946 by Voodoo Chemical Sales, Inc., Long Beach, Calif. Claims use since since Aug. 20, 1945.

VAPOCLEAN—This in upper case, bold stencil letters for liquid solvent and cleaner for removing wax, tar, oil and grease from metal. Filed Feb. 23, 1946 by General Solvents Sales Co., Rochester, N. Y. Claims use since Dec. 7, 1945.

ATOM—This in large and small capital, extra bold letters for general household cleanser for the cleaning of floors, walls, dishes, clothes, painted surfaces and cleaners for garage and other floors. Filed Mar. 6, 1946 by Theobald Industries, Kearny, N. J. Claims use since Feb. 12, 1946.

ATOMIK—This in large and small capital extra bold letters for general household cleanser for the cleaning of floors, walls, dishes, clothes, painted surfaces and cleanser for garage and other floors. Filed Mar. 6, 1946 by Theobald Industries, Kearny, N. J. Claims use since Feb. 12, 1946.

ROCKET—This in upper case, bold letters for sudsing cleaner, cleanser and detergent. Filed Mar. 14, 1946 by Procter & Gamble Co., Cincinnati. Claims use since Feb. 29, 1932.

SPIN—This in upper case, bold letters for chemical compounds for washing and cleaning. Filed July 18, 1946 by Climalene Co., Canton, O. Claims use since July 11, 1946.

COPPER-8 — This in upper case, medium letters for chemical products for use in combating insects. Filed Mar. 14, 1946 by Monsanto Chemical Co., St. Louis.

KUM-KLEAN — This in upper case, bold letters in the form of an arc for cleaning and polishing preparations for automobiles. Filed Feb. 12, 1946 by Kum-Klean Products Co., Pasadena, Calif. Claims use since Oct. 26, 1945.

PREEN—This in upper case, extra bold, black letters for cleaning and waxing preparations, for cleaning and waxing wood floors, linoleum, furniture, paneling, woodwork, tiles, metals and painted or lacquered surfaces. Filed Feb. 16, 1946 by A. S. Harrison Co., New York. Claims use since Sept. 11, 1942.

ALKATROL ELECTRONIC—This in upper case, bold letters, one word above the other for chemical cleaning compounds for washing dishes, bottles, and other containers. Filed Apr. 16, 1945 by Noble Chemical Corp., Chicago. Claims use since Jan. 4, 1943.

BLUE RIBBON — This in upper and lower case, extra black, bold letters above a pennant like design for cleaners and polishes. Filed May 14, 1945 by International Metal Polish Co., Indianapolis, Ind. Claims use on metal polish since January, 1905; and later dates on other products.

PIEZO—This in upper and lower case, extra bold, black letters for cleaners, soaps and cleaning compounds for cleaning glassware, dishes, silverware, china, kitchenware and similar articles. Filed July 31, 1945 by Piezo Manufacturing Corp., New York. Claims use since July 15, 1945.

BETTY JANE SPOT REMOVER—This in upper case, script, solid and open and upper case, block, reverse letters, the word "Betty" in a circle above but overlapped by a circle with the word "Jane" which, in turn, is above a rectangular black background that carries the words "Spot Remover" in reverse letters and is connected to the two circles above by another circle for cleaning fluid. Filed Nov. 13, 1945 by Mercer Oil & Chemical Co., Philadelphia. Claims use since Aug. 17, 1945.

HELOZ—This in upper case letters for soaps, soap powder, soap cakes, shaving cream, cleaning compositions for glass, porcelain, marble, walls, painted surfaces, linoleum, carpets, leather, and cloth, such as cotton, wool, silk, rayon and compositions for polishing and waxing metals and leather. Filed Jan. 3, 1946 by Leo Heim, Brooklyn. Claims use since Oct. 15, 1945.

PUR-A-CAN—This in upper case, solid and open letters, superimposed on the outline drawing of a milk can, for preparation for cleaning cream and milk cans. Filed Jan. 12, 1946 by Mathieson Alkali Works, Inc., New York. Claims use since Sept. 18, 1944.

SQUIRE—This in upper and lower case, bold, script letters for soaps, shaving soaps, shaving creams, shaving soap powder, shaving soap sticks and liquid detergents used as skin, hair and scalp cleansers. Filed Feb. 14, 1946 by Richmond-Phillips, New York. Claims use since Dec. 20, 1945.

JOS. F. PIEPER—This in upper and lower case, bold, script letters for silver polish and a jewel cleaner. Filed Feb. 15, 1946 by Joseph F. Pieper, Covington, Ky. Claims use since Feb. 8, 1946.

PREEN—This in upper case, bold letters for hand cleaner. Filed Feb. 20, 1946 by Preen Products, Minneapolis. Claims use since Jan. 26, 1946.

ARGON—This in upper case, bold letters for dry cleaner. Filed Feb. 21, 1946 by Affiliated Retailers, Inc., New York. Claims use since Dec. 15, 1945.

DEGREASOL—This in upper case, extra bold, stencil letters for liquid solvent and cleaner for removing tar, wax, oil and grease from metal, fabric and other surfaces. Filed Feb. 23, 1946 by General Solvents Sales Co., Rochester, N. Y. Claims use since Dec. 7, 1945.

METALOX—This in upper case, medium letters for solvent material for cleaning type and rollers. Filed Mar. 21, 1946 by Herbert Chemical Co., Cincinnati. Claims use since Feb. 15, 1936.

ELCO—This in large and small, outline capital letters for dish cleaning preparation, soap powder, aluminum cleaning preparation, glass cleaning preparation, mechanic's soap and concrete cleaning preparation. Filed Mar. 22, 1946 by Edw. Livingston & Sons, Kansas City. Claims use since January, 1941.

CHEM-TREET — This in upper case, reverse letters on a rectangular black background for chemical preparation for removing grease, killing rust and cleaning and preparing metal surfaces for painting. Filed Oct. 8, 1945 by Neilson Chemical Co., Detroit. Claims use since December, 1938.

Spheroid design for insecticides. Filed Nov. 6, 1945 by California Spray-Chemical Corp., Richmond, Calif. Claims use since Sept. 11, 1945.

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MAYA BOUQUETS

A famous line of Schimmel all-purpose compounds. So inexpensive that you can use them freely for your most competitive items. 18 exquisite Maya scents from carnation to violet add definite character and sales appeal to perfumes, powders, soaps, creams and cosmetics.

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601 West 26th Street, New York, 1, N. Y.

CHICAGO—CINCINNATI—ST. LOUIS—DALLAS—LOS ANGELES—SAN FRANCISCO

BIDS AND AWARDS

Misc. Treasury Bids

In three recent openings for miscellaneous supplies by the Treasury Department's Procurement Division, Washington, D. C., bids were received on:

I. 500 quarts of furniture polish—from Industrial Distributors, New York, 19.5 cents a quart; Imperial Products Co., Philadelphia, 17.9 cents; R. M. Hollingshead Corp., Camden, N. J., 21.5 cents; C. P. Baker & Co., Philadelphia, 33 cents; Solarine Co., Baltimore, 17 cents; Trio Chemical Works, Brooklyn, 25 cents; Janitors Supply House, Baltimore, 50 cents; Manhattan Lighting Equipment Co., New York, 53 cents, and Oil Specialties & Refining Co., Brooklyn.

II. 240 gallons of disinfectant—from Saspin Chemicals, Inc., Chicago, $1.65; Gerson-Stewart Corp., Cleveland, $1.10; R. M. Hollingshead Corp., Camden, N. J., $1.39; Merriam Chemical Co., Washington, $3.15; James Huggins & Sons, Malden, Mass., $1.08; Nuzon Eastern Corp., Mamaroneck, N. Y., $2.65 and Pa-Boy Distributing Co., Thomasville, Ga., $1.625.

III. Soap—from Utility Co., New York, 1,000 pounds of grit paste soap, 9.8 cents a pound; William Messer Corp., New York, 7,500 pounds of laundry chip soap, 33 cents a pound; 1,000 pounds of grit soap paste, 12.5 cents; 900 pounds of grit soap paste, 12.5 cents; 30,000 pounds of laundry soap, 18.88 cents; 10,000 pounds of powdered laundry soap, 32 cents; 11,200 pounds of soap powder, 15 cents; on 11,250 pounds of grit hand soap offered 450 cases, each containing 100 cakes weighing approximately 4 to 4½ ounces, unit price $8.34, total $3,854; R. M. Hollingshead Corp., Camden, N. J., 1,000 pounds grit soap paste, 8.4 cents a pound; 900 pounds of grit soap paste, 7.4 cents; Imperial Products Co., Philadelphia, alternate for 480 pounds laundry powdered soap, 18.7 cents a pound, packed 2 pounds to a box, 12 boxes to a case; 10,000 pounds powdered laundry soap, 16.7 cents, packed 50-pound heavy paper bag; 2,400 pounds of soap powder, 18.7 cents, 2 pounds to a box, 12 boxes to a carton; 11,200 pounds soap powder, 16.7 cents, 50 pound paper bag; Day & Frick, Philadelphia, 11,250 pounds grit hand soap, 13 cents a pound.

D. C. Insecticide Bids

The following bids were received in recent openings for miscellaneous supplies by the District Government, Washington, D. C.: 200 pounds of DDT crystals, Cleveland Scientific Laboratories, Willoughby, O., $1.50; Cole Laboratories, Long Island City, 57 cents; Imperial Products, Philadelphia, 80 cents; McCormick & Co., Baltimore, 75 cents; Z. D. Gilman, Washington, 75 cents; Octagon Process Co., Brooklyn, 62 cents. In another District Government opening the following bids were received on 800 pounds of red squill powder; Z. D. Gilman, Washington, 75 cents; Octagon Process Co., Brooklyn, $1.90, and R. J. Prentiss & Co., New York, $1.30.

Low Shave Soap Bid

Lanair Chemical Corp., Chicago, entered the low bid of 33 cents on 584 pounds of shaving soap in a recent opening for miscellaneous supplies by the Treasury Department's Procurement Division, Washington, D. C. Other bidders in the same opening were: Standard Barber Supply Co., Brooklyn, 50 cents a pound; Wm. Messer Corp., New York, 34.4 cents, and Unity Sanitary Supply Co., N. Y., 36c.

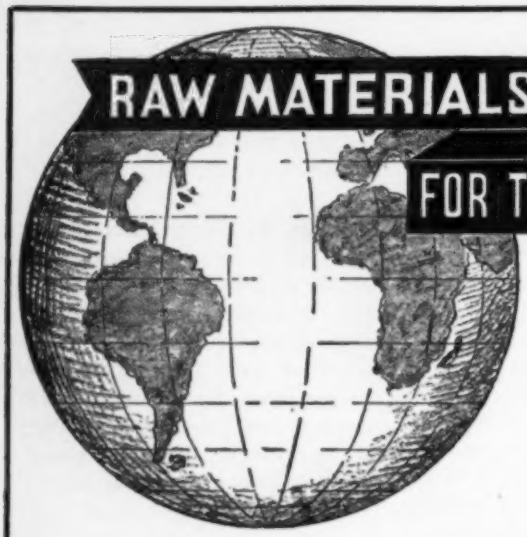
Misc. N. Y. Navy Bids

In a recent opening for miscellaneous supplies by the New York Navy Purchasing Office, New York, the following bids were received on: 35,000 pounds of toilet soap, 40 cents by Octagon Process Co., Brooklyn; 10,000 pounds of soap powder, Octagon Process Co., Brooklyn, 35 cents a pound; Pacific Coast Borax Co., Los Angeles, 13.5 cents with an alternate of 11.662 cents; Wm. Messer Corp., New York, 20.12 cents, and Imperial Products Co., Philadelphia, 29 cents.

In another New York Navy Purchasing Office opening for 2,200 gallons of grease cleaning, solvent compound, the following bids were received: R. M. Hollingshead Corp., Camden, N. J., 66 cents a gallon in non-returnable drums; Pacific Chemical Co., Los Angeles, 73 cents a gallon, $1.50 for each drum returned; Chicago Sanitary Products Co., 88 cents a gallon, $2.25 for each drum returned; Crystal Soap & Chemical Co., Philadelphia, $1.30 a gollon in non-returnable drums; Turco Products Co., Houston, Tex., $1.45 a gallon in non-returnable drums.

To Sell Robertet Oils in U. S.

Michael Lemmermeyer, president of Aromatic Products, Inc., New York, has announced that they have resumed the sale of the natural perfuming products in the United States of P. Robertet & Cie. of Grasse, France. Stocks of Robertet absolute flower oils, concretes, resinoines, and other specialties are now available in stock in New York, according to Mr. Lemmermeyer, who returned late in October from a four weeks' stay in France and England. While abroad, Mr. Lemmermeyer was impressed by the expansion and improvement made in the Robertet plant. He is here shown upon his arrival in New York on the "maiden" voyage of the S/S Queen Elizabeth being met by his family at the pier, Jane and Ruth Lemmermeyer, Mrs. Lemmermeyer, and "his nibs" in person.



RAW MATERIALS FOR THE SOAP INDUSTRY FROM ALL PARTS OF THE WORLD

SPECIALTIES
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VEGETABLE ANIMAL MINERAL OILS
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Alkalies and other Chemicals. Textile and Laundry Starch & Sours.

RED OIL **STEARIC ACID**
COCOANUT OIL **BABASSU OIL**
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LANOLIN **WOOL FAT** **DEGRAS**

SILICATE OF SODA, METSO, all types
QUADRAFOS, Granular or Beads
A stable polyphosphate for water conditioning
and mild but effective detergency

Air Dryettes and Calcium Chloride

CHLOROPHYLL **CAROTENE**

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Unique surface active agents; prolific foam; high detergency and emulsifying powers; suitable for cosmetic and industrial use.

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RAW MATERIAL MARKETS

As of December 11, 1946

PRICES continue to hover in the ranges to which they climbed when the remaining oil and fat ceilings were removed Oct. 29. Roughly speaking, prices are about two and one-half times their level under OPA. Any tendency of prices to recede very far from their record highs reached shortly after price decontrol has been checked largely by the continued world wide shortage of fats and oils. Summarizing the price position of the soap maker's principal fats and oils, the U. S. Department of Agriculture, through its medium, *The Fats and Oils Situation*, stated: "Prices of inedible tallow and greases moved up to around 20 cents a pound following decontrol. Prices of coconut oil also advanced sharply." (From 8.85c to 23 or 24 cents a pound. Current spot quotations are reported at 22 cents, while January future couples are 18 cents, 19 cents for January futures alone. A report that the coconut market had cracked late in November could not be confirmed. The Pacific Coast maritime strike has set copra crushers way back, which probably accounts for the firm market situation on coconut oil.) "Soap fats," *The Fats and Oils Situation* continues, "generally are in a strong price position for the near future, as shown by factory and warehouse stocks Oct. 1, which were nearly 400 million pounds or 51 per cent below the prewar average.

The most recent development in the fat and oil market has been the cancellation of the agreement under which the Philippines agreed to ship their entire copra output to the United States at a fixed price of $110.25 a ton landed on the Pacific coast. The agreement was cancelled by Secretary of Agriculture Anderson at the request of the Philippine Government after oil and fat price controls were abandoned in the United States. The price of Philippine copra promptly mounted to $190-$195 a ton.

The Outlook for Supplies

Output of fats and oils in the United States in the year that began with October, 1946, will be the smallest since 1939. Output of tallow and greases is expected to be large this winter, but production of greases will drop by late spring as a result of the sharp cut in the size of the 1946 fall pig crop. Production from domestic materials is forecast at 8.7 billion pounds, about equal to the average for the

SEASON'S GREETINGS

from

Compagnie Parento, Inc.

An Outstanding New Dow Specialty

Two distinctive qualities blend together in C-64, Dow's newest aromatic specialty. Warm and rich on the one hand, C-64 carries at the same time a distinct feeling of sparkle and freshness. A most unusual combination . . . and one which offers a wealth of opportunities for new and original effects!

The odor of C-64 is powerful and spicy, with a distinctive overtone, somewhat reminiscent of patchouli. A highly stable, crystalline material, C-64 blends well with citrus oils and dissolves in even dilute alcohol. Blenders will find it extremely valuable for all types of oriental perfumes, for colognes, and for inclusion in soaps and cosmetics. A request on your company letterhead will bring working sample and full details.

DOW AROMATIC PRODUCTS: *Coumarin, Cyclotens, Diphenyl Oxide, Diphenyl Methane, Gardamthrol, Indol, Methyl Anthranilate, Methyl Phenyl Carbinyl Acetate, Methyl Salicylate, Palatone, Phenyl Ethyl Acetate, Phenyl Ethyl Alcohol, Styrene B-100, Sylvenol, and others—*

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Synthetic
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CHEMICALS
INDISPENSABLE TO INDUSTRY

1937-41 crop years but 2.5 billion pounds less than the peak production of 11.2 billion pounds in 1943-44. Major reductions since that year have occurred in output of lard, tallow and grease. However, increased production of most, if not all, of these items is likely in the 1947-48 crop year as a result of the high prices likely to prevail during the coming winter and early spring.

World export supplies of fats available to North America and Europe — particularly of palm oil and whale oil — will not return to prewar levels before 1948 at the earliest. Moreover, animal-fat production in Europe will be subnormal for some time to come and world populations and demands are increasing.

Factory and warehouse stocks of fats and oils in the U. S. on Oct. 1, totaled 1,209 million pounds, 441 million pounds less than a year earlier and 697 million pounds below the 1932-41 average. Stocks probably will increase more than seasonably this winter, since many dealers and users will rebuild depleted inventories. A substantial quantity of fats probably will move into unreported inventories such as wholesalers' and retailers' floor stocks. Inventory accumulation will accentuate the upward pressure on prices.

During the month the U. S. Department of Agriculture requested sealed bids on 45,000,000 pounds of coconut oil, 25,000,000 pounds of which are earmarked for margarine manufacturers for overseas shipment. This further reduction in government stockpiles of oil is believed to augur the windup of the Credit Commodity Corporation's activities.

Glycerine prices, which rose so sharply with price decontrol, are now reported to be settling somewhat from the highpoint of 85 cents a pound refined to 55 cents from the major suppliers. Soaplye, 80 per cent glycerine is currently quoted at 50 cents a pound. There probably are sales of the refined at 70 cents, but these are unusual. OPA ceiling price for the 80 per cent, soaplye, glycerine was 11½ cents, while the refined item had a ceiling of 18½ cents in tank car lots.

Other price increases announced during the month affect carbon tetrachloride, which was advanced one half cent per pound; and soda ash, caustic soda and chlorine. The latter three were raised in price under terms of the 1947 contracts of Solvay Sales Corp., New York. Paradichlorbenzene has also been advanced a cent and a half a pound. All chlorine products are reported in short supply.

Brazil's exports of carnauba wax in the first quarter of 1946 increased 59 per cent in quantity and 130 per cent in value as compared with the first quarter of 1945, according to the Department of Commerce.

Perfuming materials sold in good volume during the latter part of the month in preparation for Spring holidays. In addition, 18 different oils came into the U. S. during the last week of November in varying quantities. Price advances were recorded on cajeput, Ceylon citronella and bourbon vetiver. Patchouli and N.F. anethol prices were reduced slightly.

YES! AVAILABLE!!

BEAD FORM

SYNTHETIC DETERGENT

(Alkyl Aryl Sulphonate)

(Low Alkalinity—High Percentage Active Ingredient)

Specific Gravity—.1 (Approximately 10 times as bulky as soda ash.)

FOR FOAM-BULK-DETERGENCY

ALSO

Complete Line of High Quality Synthetic Detergents—Paste—Powder and Liquid for Compounding.

EAVENSON CHEMICAL CO.

55 Liberty Street **New York 5, N. Y.**

To a man in a diver's suit, well-dressed means well-*protected*. A product in a metal container has the same problem. And, in the case of National cans, more than just one kind of protection is demanded.

Air-tightness as well as water-tightness stems from the successful efforts of National Can engineers to make can seams that are second to none. Our work on seams goes back nearly half a century.

If they had time these days, our engineers could stand up and take a bow for their ingenuity and downright helpfulness in getting to the bottom of protection problems. And, busy as they are, they want you to keep sending in your problems.

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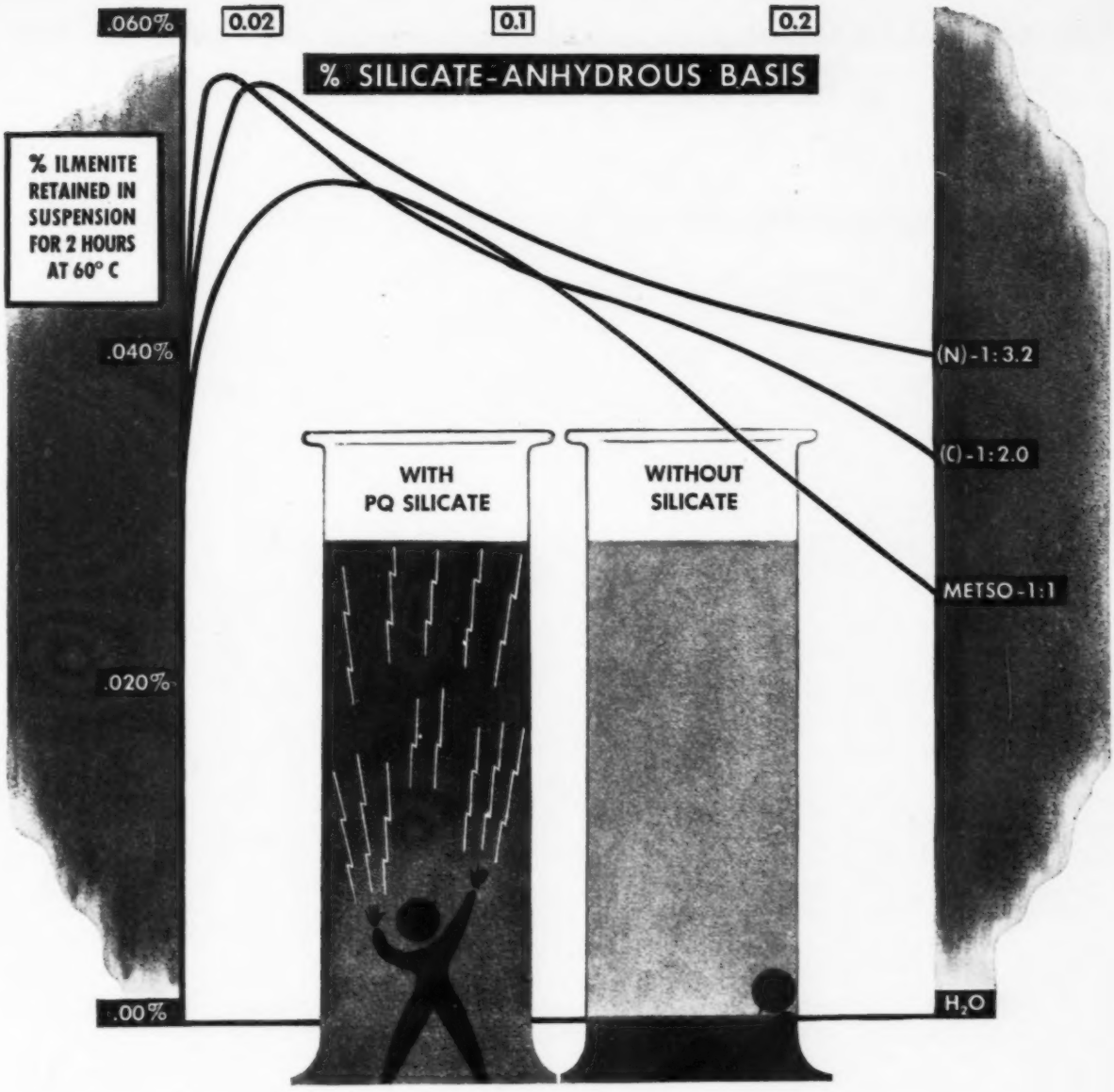
CORPORATION

EXECUTIVE OFFICES: 110 EAST 42nd STREET, NEW YORK 17, N. Y.

Sales Offices and Plants: Baltimore, Md. • Chicago, Ill. • Hamilton, Ohio • Boston, Mass. Detroit, Michigan • Indianapolis, Ind. • Maspeth, New York • McKeesport, Pa. • St. Louis, Mo.



PQ SILICATES AT WORK ON DIRT

Good detergent action involves keeping solid dirt in the state of suspension until it can be freely rinsed away. In distilled water, soap is a satisfactory suspending agent, but in commercial waters soap and silicate are better over a wide range of concentration. Furthermore, the soluble silica (SiO_2) has the added advantage of preventing the redeposition of the removed dirt onto the cleaned object.

PQ Silicates long have been used as economical dirt suspenders. The behavior of three widely-accepted detergent PQ Silicates in suspending dirt is charted above. The soil used was Ilmenite black; the time 2 hours, the temperature 60° C. Note that all silicates work efficiently over laundry concentrations.

May we tell you about this and other valuable detergent properties contributed by PQ Silicates to cleaning compounds and soaps? Send for our Bulletin No. 170 "The Role of Silica."

SILICATES PQ OF SODA

PHILADELPHIA QUARTZ CO.

DEPT. B, 129 SOUTH THIRD STREET, PHILADELPHIA 6, PA.

KRANICH SOAPS

CONCENTRATED

LIQUID SOAP
SHAMPOO

★ ☆ ☆ ☆ ★

POWDERED SOAPS

Pure Coconut
U.S.P. Castile

★ ☆ ☆ ☆ ★

POTASH SOAPS

Soft Potash 40%
U.S.P. XII Green

★ ☆ ☆ ☆ ★

Kranich Soap Company, Inc.

55 Richards Street **Brooklyn 31, N. Y.**

KRANICH SOAPS

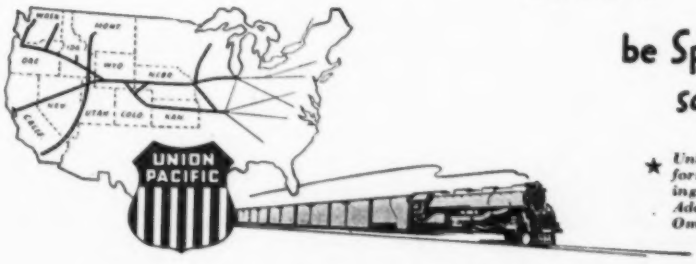
A MESSAGE TO THE SOAP INDUSTRY

More POWER to You

Three great dams, harnessing the natural force of the Colorado and Columbia Rivers, provide tremendous industrial power.

Giants of the rails, the Union Pacific "Big Boy" locomotives provide freight transportation power over the Strategic Middle Route.

Power, light, and efficient transportation . . . combined with a wealth of raw materials and adequate "growing space" . . . offer unusual opportunities for industry in the Union Pacific West.



be Specific – say "Union Pacific"

★ *Union Pacific will gladly furnish confidential information regarding available industrial sites having trackage facilities in the territory it serves. Address Industrial Dept., Union Pacific Railroad, Omaha 2, Nebraska.*

UNION PACIFIC RAILROAD

The Strategic Middle Route

We are taking time out...

to thank our customers and friends on this occasion for their never-failing confidence in our equipment—and for their splendid cooperation in the trying times we are passing through together. We, here at Houchin, wish you all a . . .

MERRY CHRISTMAS

•

Let us know what you wish to do — and we will advise you as to what machines will do it most efficiently.

•

HOUCHIN
MACHINERY COMPANY, INC.
Manufacturers of Soap Making Equipment

SIXTH and VAN WINKLE AVENUES **HAWTHORNE, N. J.**

PRODUCTION SECTION

Cold Fractionation of Fatty Oils

SUCCESSFUL commercial development of a new solvent extraction process for refining animal, vegetable, and marine oils and separating them into a number of basic segments was announced November 20th, 1946, by M. W. Kellogg Co., New York process engineers. This new process brings the fatty oils industry up to date in the processing of oils by the application of modern chemical engineering techniques and principles which have long been utilized in the petroleum oil industry.

The process, known under the trade name of "Solexol" is based on physico-chemical techniques rather than on the conventional chemical reaction methods used in the past such as lye refining, chemical bleaching and the like. The process employs propane under pressure in a selective liquid-liquid extraction at ratios varying from 2:1 to 10:1, and is conducted at relatively cool conditions approaching the critical temperature of the solvent (206°F) at a maximum, and renders it incompletely miscible with the oil under process. The solvent is non-toxic, non-corrosive and very stable. Thus, operating below the boiling point of water, it is a solvent extraction and fractionation method which, in a continuous operation, refines, deodorizes, decolorizes, extracts, and concentrates the constituents of the oils treated, in such a way as to minimize changes in their original chemical structures.

The counter-current process works automatically in a completely closed air-excluded system. Oils to be refined are generally introduced at a point somewhere near the middle of a tower some sixty feet in height which is packed with Raschig rings, trays, baffles, or suitable packing material. By varying the temperature and solvent ratios at various heights in the column, the constituents are segregated, concentrated, and separated from the system. The temperature of the system increases with increasing height of the column. Higher molecular weight bodies within an homologus series of chemical types drop out nearer the bottom of the tower. In this fraction are found most of the color bodies. Unsaturated glycerides separate from solution next, followed by saturated glycerides and fatty acids. Light oil fractions are concentrated in the upper layer and vitamin fractions are among the last materials separated. Finally, at the critical temperature of the propane, practically everything has been precipitated, odor bodies being removed at the top of the column. By careful attemperation of a particular fraction, effected by controlled release of propane from the micella under pressure, the process provides a way of separating the constituents of that particular cut by fractional crystallization.

Advantages of the Process

On the economic side, the process assures increased earning power to oil processors through two basic advantages: (a) its low cost of operation; and (b) its recovery of various products having a higher market value from oils which before processing sell at low prices. Several advantages of the "Solexol" process over conventional methods of refining are derived from the fact that the operation is carried on at temperatures below 200° F. and without the use of chemical reactions. Thus, highly unsaturated glycerides and fatty acids are not polymerized and darkened, no vitamin content is destroyed because of high thermal decomposition or conversion to an unstable derivative, the naturally occurring ester forms prevailing, and all oil in the glyceride state remains unchanged. Since products are so highly refined, flavor and stability are enhanced. Because no soap is produced, refining losses of entrained oil are avoided.

As the process is based on selective extraction and fractionation, the glycerides in the oil are not only purified but physically separated into a number of divisions differing in chemical structure. The high iodine-number cut prepared from vegetable and marine sources is a high quality extender for tung and linseed oils in the manufacture of paints and varnishes, linoleum, printing inks, etc.; whereas the low iodine-number cut from the same sources has improved keeping properties when manufactured into oleomargarine, shortenings, frying and salad oils.

Low grade oils can be processed economically. Dark tallows can be highly up-graded. Vitamin fractions can be separated from marine oils. And from vegetable oils, anti-oxidants such as tocopherols and stigmasterol can be isolated. Fatty acids and resins may be recovered from tall oil. Another advantage in such a continuous process is that operation is automatically controlled. Processing costs are as low as a fraction of a cent to 3 cents per gallon of oil processed. The absence of moving parts, chemicals and high temperatures insures low maintenance costs, cleanliness, and long continuous runs. None of the equipment need be housed except control instruments, pumps and compressors, thus reducing

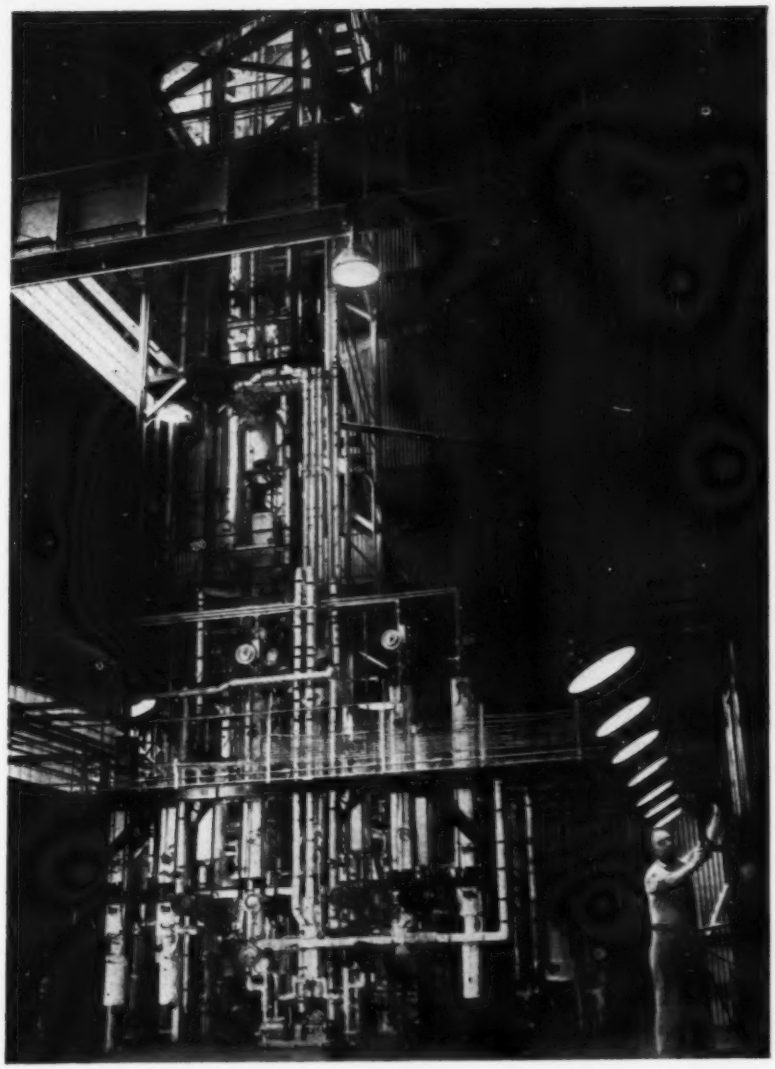
LIQUID SOAP TO DRIED FLAKES

in Seven Minutes

In one typical installation of the Proctor Automatic Flake Soap System hot liquid soap is converted into thin, uniform ribbons and dried to the desired moisture content in a mere seven minutes. In this particular system hot liquid soap, with a moisture content of 30% (wet weight basis) and temperature of 180° F. is discharged from the crutcher into the hopper of the Proctor chilling roll. An average temperature of 50° F. within the roll acts to solidify the liquid soap. Precision set needles cut solidified soap into ribbons $\frac{3}{16}$" wide by 13/1000" thick. These ribbons are then carried by special conveyor and deposited on top conveyor of the dryer. Ribbons are carried along top conveyor through 8 drying units, then dropped to middle conveyor and returned toward the feed end of the dryer where these ribbons are dropped to the third conveyor and carried to the delivery end of the machine. Soap with a moisture content of 13.5% (commercial dry weight) is discharged from the dryer SEVEN MINUTES after entering the main body. The output of this particular installation ranges from 3400 to 4800 pounds (commercial dry weight) per hour. Every phase of the operation is automatic and every factor affecting flake thickness and drying is accurately controlled. Ribbons are ideally suited to further processing—whether soap is to be finished in form of flakes or toilet cakes. If you are engaged in the production of soap, it will pay you to investigate the details of this modern Proctor system. Write today, give us as much information about your problem as possible.

P&S

PROCTOR & SCHWARTZ, INC. • PHILADELPHIA 20 • PA.



"Solexol" process pilot plant and panel control board.

Tallow	Crude	Decolorized Tallow	Color Bodies etc.
Color—FAC	Black	2	Black
Color—Lovibond	—	10Y-1R	—
Titer—°C.	40.3	40.8	—
Free Fatty Acids—(%oleic)	95.1	97.0	40.0
Iodine Number	58	58	60
Saponification Number	202	203	170
Unsaponifiable matter—Wt. %	0.9	0.8	3.4
Oil Yields—Wt. %	100.0	97.5	2.5

Possible uses of products:
Decolorized tallow—soaps, proparation of free fatty acids.
Color bodies—pitch in floor tiling, roofing compounds, etc.

Tallow	Crude	Decolorized Tallow	Color Bodies etc.
Color—FAC	25	2	Black
Color—Lovibond	—	10Y-1R	
Titer—°C.	42.2	42.4	
Free Fatty Acids—(%oleic)	10.6	10.8	3.0
Iodine Number	49	49	56
Saponification Numbers	192	194	180
Unsaponifiable matter—Wt. %	0.9	0.9	2.0
Oil Yields—Wt. %	100.0	99.0	1.0

Possible uses of products:
Decolorized fatty acids—separation into stearic and oleic acids., rubber compounding, textile oils, polishes, greases, emulsion alkyd resins, soaps.
Color bodies—pitch used in floor tiling, electrical insulation, industrial paints.

investment costs. Generally the process can be run by one trained operator, with another helper to lend a hand from time to time. The replacement cost of solvent is low, as operational losses are only about 1/10th of one per cent daily.

Applied to Soap Industry

The efficiency and economic advantages of the "Solexol" process are claimed to be particularly advantageous to the soap industry. Low cost raw materials can be up-graded and new and higher priced constituents can be separated, providing the soaper with a number of new markets to tap. Engineering is now under way for the construction of several units utilizing this process for manufacturers of soaps and soap materials. Being continuous, the process permits large volume, and constant quality refining of oils for soap in much better fashion than traditional batch methods. Since the color bodies in soap oils are high molecular weight compounds, they are easily and completely removed, leaving white refined oils. The fact that the separation of the various oil fractions is done physically eliminates any side reactions caused by use of chemicals with the absence of caustic treatment, clay bleaching and activated earth treatment and the resulting soap fats are unchanged, retaining their natural qualities.

By isolating the free fatty acids from the glycerides in treating tallow without reacting them with alkali to form soaps, the acids with no further treatment may be sold by the processor to other industries. By sending vegetable, animal, and marine oils through the process and segregating the various cuts on the bases of saturation and chain length, a pool of glycerine and fatty acids of various specifications results. The soap maker can then draw from this pool as he chooses to formulate blends of a particular iodine value or titer for saponification into a soap of constant hardness and solubility regardless of the raw materials available.

The results of the "Solexol" process on a low grade tallow and on

(*Turn to Page 199*)

Norda

Synthetic floral oils . . .

PRESENT reduced supplies of natural floral essences emphasize the value of high quality substitutes. Synthetic floral essences can be used to replace the natural oils with full satisfaction and marked success in numerous products,—toilet soaps, shampoos, shaving creams, powders, creams, and many others.

In fact, in many products the newer synthetic floral essences are to be *preferred* for the manner in which they reproduce the true fragrance of the living flowers in the finished product,—not to mention uniformity of quality and odor fidelity, and their economy under present conditions.

Let us tell you more about these Norda substitutes as an answer to the scarcity of natural floral oils.

NORDA Essential Oil and Chemical Co., Inc.

Chicago Office
325 W. Huron St.
Los Angeles Office
2800 E. 11th Street

St. Paul Office
253 E. 4th St.
Toronto Office
119 Adelaide St., W.

New York Office
601 West 26th St.
Montreal Office
135 Commissioners St., W.

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U.S.I. CHEMICAL NEWS

December ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1946

THE MONTH IN THE AUTOMOTIVE INDUSTRY

A new device to remove gum, varnish, and carbon in cylinders is produced . . . A new plant, manufacturing synthetic liquid motor fuel from farm residues, is placed in operation in this country . . . Surveys show that the production of gasoline from coal is practical but not yet competitive with production from crude oil . . . Lubricants containing ingredients for wetting metal surfaces tend to decrease the rate of wear in engines, according to a report . . . A motor fuel, said to be stable against gum formation, is patented . . . Placed on the market is a war-developed oil which is claimed to loosen deposits of soot, carbon, varnish, and sludge in the old engine in addition to lubricating . . . A new machine for repairing tires and other rubber products is manufactured . . . Successful tests are run on the production of synthetic gas from anthracite and pure oxygen . . . A new synthetic lubricant is prepared by adding butanol to 1,2 propylene oxide . . . New-type cables, insulated with vinyl plastics, are reported to resist the attacks of grease, oil, gasoline, and "corona" . . . Details are published of the "catarole" process for producing aromatic hydrocarbons from petroleum . . . Government research discloses that natural gas can be used successfully in Diesel engines.

Novel Process Prevents Acid-Fading in Textiles

Textiles which neither fade nor change color when exposed to acid fumes, such as the combustion products of coal or gas, are now possible, according to the claims made in a recent patent. Anti-fading qualities are imparted to the fabric by treatment with aqueous solutions of triethanolamine containing a solvent or swelling agent for the organic derivative of cellulose materials. Suitable swelling compounds are said to be ethyl alcohol, butyl alcohol, and acetone. Ethyl alcohol is reported to be employed in aiding the triethanolamine penetrate the textile material, and may be present in the aqueous solution in varying concentrations.

Methionine Is Found to Have Anti-Anemic Action

Rats made anemic by injections of carbon tetrachloride were treated successfully by methionine injections, according to a paper published recently by two French scientists. The methionine is said to have caused a rapid increase in red-cell count even though the administration of small doses of carbon tetrachloride was continued. Oral administration of methionine corrected anemia due to treatment with carbon tetrachloride or to a diet deficient in methionine, the authors state.

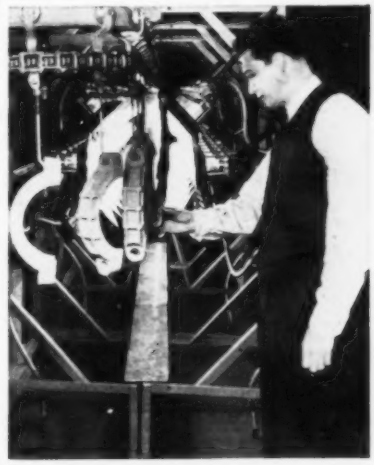
New Saccharin Synthesis

Saccharin has been commercially prepared from anthranilic acid (*o*-amino-benzoic acid), it was announced recently. The yield, based on this starting material, is 58-60 per cent, and the cost is as low as that of previously used processes, the report states.

Wide Use Seen for Organic Chemicals in Post-War Autos

Applications Include Antifreezes, Protective Coatings, Upholstery, And Insulating, Dewaxing, and Corrosion-inhibiting Compounds

Vital to the appearance and performance of the high-powered, sleek-looking cars now beginning to roll from the assembly lines are many types of organic chemicals. Applications of these versatile compounds range from today's color-rich, long-lasting finishes to materials that prevent the formation of corrosive substances in the fuel and lubricating systems. Outstanding U.S.I. contributions to the automotive industry include many of these important organic chemicals as well as proprietary products such as Super Pyro Antifreeze, Solox — a general purpose solvent, and PiB — an ignition insulation material.



Their surfaces finished hard and tough, these couplings emerge from the infra-red ovens. Many automotive coatings are now manufactured with the aid of U.S.I. resins, solvents, and plasticizers.

Coatings, Plastics, Upholstery

Many synthetic and natural resins, and solvents and plasticizers aid in the production of quick-drying, durable, attractive finishes which help speed the production of trailers, trucks, busses, streetcars, passenger cars, trac-

(*Continued on next page*)

Farm Products Are Source Of New Synthetic Fibers

Government laboratories throughout the country have developed new synthetic fibers from agricultural products and improved old ones, according to an announcement made recently. These fibers are not intended to replace natural fibers, but are expected to improve natural fibers when the two are mixed. All the experimental fibers developed so far are high in wet strength.

Most important of the new fibers is Savelon, manufactured from peanut protein. It has a light cream color and is said to be reminiscent of both silk and wool. Another new fiber is said to be manufactured from chicken feathers. Improvements have also been made in a fiber made from zein, a protein obtained from corn, and in casein fiber. The new zein fiber is stated to have a rich, creamy appearance and a dry strength almost equal to wool. The improved casein fiber is reported to be more uniform and more economical than its predecessor.

Fish Odor of Vitamins Destroyed by New Process

A method for removing undesirable tastes and odors of fat-soluble vitamin-containing materials such as fish oils and concentrates while retaining their potency, is announced in a patent issued recently. The patent describes the process as consisting of mixing the vitamin materials with crude vegetable oils and heating in an open vessel in the presence of an inert gas.

New Soap Preservative

The development of rancidity and discoloration in granular soap products is inhibited by a new product, according to the claims made in a patent issued recently. The inhibitor is described as a polyethylene polyamine.

The 1947 cars look better, ride better, thanks to the help of a wide variety of organic chemicals.

ADVERTISEMENT—*This entire page is a paid advertisement.*

December ★ **U.S.I. CHEMICAL NEWS** ★ 1946

Organic Chemicals in Post-War Autos

(Continued from preceding page)

tors and other transport equipment. Many of these coatings, based on new alkyd resins, bake fast to produce a gloss that stands up under water, weather, oil, alcohol, and gasoline. The use of these products also imparts to the automotive finishes the important characteristics of hardness, toughness, mar-resistance and adhesion. Finishes of this type wash easily, and respond to polishing quickly.

U.S.I. Chemicals in the Automotive Industry

U.S.I. manufactures the following organic chemicals vital to the manufacture of today's automobiles, busses, trucks, and similar forms of transportation:

CHEMICALS – Ethyl alcohol, butyl alcohol, specially denatured alcohol, completely denatured alcohol, acetone, amyl acetate, butyl acetate, ethyl acetate, diethyl oxalate, diamyl phthalate, dibutyl phthalate, diethyl phthalate, natural and synthetic resins.

PROPRIETARY PRODUCTS—Super Pyro Antifreeze, PiB, Ansols, and Solox. (Registered trade marks of U.S.I.)

Important steps in the manufacture of many of the plastic and plastic-treated parts of the modern car require the use of U.S.I. organic chemicals. Solvents and plasticizers are frequently employed in the manufacture of molded plastic items, such as electrical fixtures, distributor heads, door handles, and dashboard instruments. The same products are used in the production of plastic-treated fabrics for upholstery. This new-type upholstery makes smarter, brighter colors practical, doesn't fade or change color, stays cleaner longer, and defies wear.

Boosts Performance

U.S.I. contributions to the high operating efficiency of today's cars include the improvement of the quality of gasoline and lubricating oil, the removal of cylinder carbon, and the protection of radiators against low temperatures. Organic chemicals are used to manufacture that well-known anti-knock compound, tetraethyl lead, and to dewax, purify, and refine lubricating oils. Recent studies from abroad have also shown that small amounts of diethyl oxalate inhibit the corrosion of metallic bearings.

Antifreeze protection is supplied by Super Pyro and U.S.I. completely denatured alcohol. These two types of antifreeze products will provide low-temperature protection suitable for all types of automobile cooling systems. Super Pyro also lessens the danger of overheating since it keeps the cooling system clean.

An ideal companion for Super Pyro Antifreeze in the automotive field is PiB, a unique insulating material which shows remarkable ability to protect electrical systems from moisture, wet weather, and many acids. This liquid product is applied by brush or spray on plugs, wiring, distributors, coil terminals, and batteries – and once the engine has been properly treated with PiB, it can be "hosed down," and it won't even miss.

Other Applications

Organic solvents are used in the preparation of synthetic rubber for the manufacture of tires and accessories. Small amounts of methyl, diethyl, or dibutyl phthalate have been suggested to increase substantially the load-carrying capacity of lubricants. Highly flexible, permanently transparent sheets for use in laminated safety glass can be formed from polyvinyl resins made from butanol. Butanol is also used in the manufacture of accelerators for rubber vulcanization.

Polyvinyl butyral, essential in the manufacture of the plastic interlayer for this shatterproof windshield, is made with butanol.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

A new sizing agent, developed due to shortages of corn and other starches, is described as a soluble resin, having all the superior qualities of the older sizing agents. **(No. 139)**

USI

A non-flammable oil, said to be suitable for use in aircraft, is reported to have been approved by the Naval Research Laboratory. **(No. 140)**

USI

To prevent discoloration of plastics, a new stabilizing agent has been developed. It is described as a liquid which prevents discoloration due to high temperature and exposure to sunlight. **(No. 141)**

USI

A new water repellant for textiles, papers, and ceramics is non-acid, and will not cause deterioration in the fibers of textiles or papers, according to the manufacturer. **(No. 142)**

USI

A new plasticizer for protein plastics is described as an amber-colored viscous liquid, said to give tough, flexible, permanent films. It is recommended for use in compounding synthetic coatings and adhesives. **(No. 143)**

USI

A new wood floor preservative, said to penetrate, seal, and finish all types of wood floors in only one application, is stated to be impervious to the action of water and alcohol. **(No. 144)**

USI

A new waterless cleaner removes dirt, grease, ink, rust-stains, and dried paint from hands merely by rubbing and wiping, the manufacturer states. **(No. 145)**

USI

A slide rule, reported to be accurate to 19 decimal places, is now being marketed. **(No. 146)**

USI

To protect wood products from swelling, a new process is announced which is said to produce a high degree of dimensional stability. **(No. 147)**

USI

To keep shipments from sliding in railroad cars, trucks and steamships, thus cutting transit losses, a new adhesive has been developed. Applied to the bottom surface of each container, it is alleged to have high sheer strength which prevents sidewise or lengthwise shifting, and low tensile strength which permits the easy release of each container by a sharp upward blow. **(No. 148)**

U.S.I INDUSTRIAL CHEMICALS, INC.

60 EAST 42ND ST., NEW YORK 17, N. Y. U.S.I. BRANCHES IN ALL PRINCIPAL CITIES

ALCOHOLS
Amyl Alcohol
Butanol (Normal Butyl Alcohol)
Fusel Oil—Refined

Ethanol (Ethyl Alcohol)
Specially Denatured—all regular and anhydrous formulas
Completely Denatured—all regular and anhydrous formulas
Pure—190 proof, C.P. 96% Absolute
*Super Pyro Anti-freeze
*Solox proprietary Solvent

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ACETIC ESTERS
Amyl Acetate
Butyl Acetate
Ethyl Acetate

OXALIC ESTERS
Dibutyl Oxalate
Diethyl Oxalate

PHTHALIC ESTERS
Diamyl Phthalate
Dibutyl Phthalate
Diethyl Phthalate

OTHER ESTERS
*Diatol
Diethyl Carbonate
Ethyl Chloroformate
Ethyl Formate

INTERMEDIATES
Acetoacetanilide
Acetoacet-ortho-anisidide
Acetoacet-ortho-chloranilide
Acetoacet-ortho-toluidide
Acetoacet-para-chloranilide
Alpha-acetylbutyrolactone
5-Chloro-2-pentanone
5-Diethylamino-2-pentanone
Ethyl Acetoacetate
Ethyl Benzoylacetate
Ethyl Alpha-Oxalpropionate
Ethyl Sodium Oxalacetate
Methyl Cyclopropyl Ketone

ETHERS
Ethyl Ether
Ethyl Ether Absolute—A.C.S.

FEED CONCENTRATES
Riboflavin Concentrates
*Vacatone 40
*Curbay B-G *Curbay Special Liquid

ACETONE
Chemically Pure

RESINS
Ester Gums—all types
Congo Gums—raw, fused & esterified
*Aroplaz—alkyds and allied materials
*Arofene—pure phenolics
*Arochem—modified types
Natural Resins—all standard grades

OTHER PRODUCTS
Collodions
Ethylene Glycol
Nitrocellulose Solutions
Ethylene
Urethan
dl-Methionine

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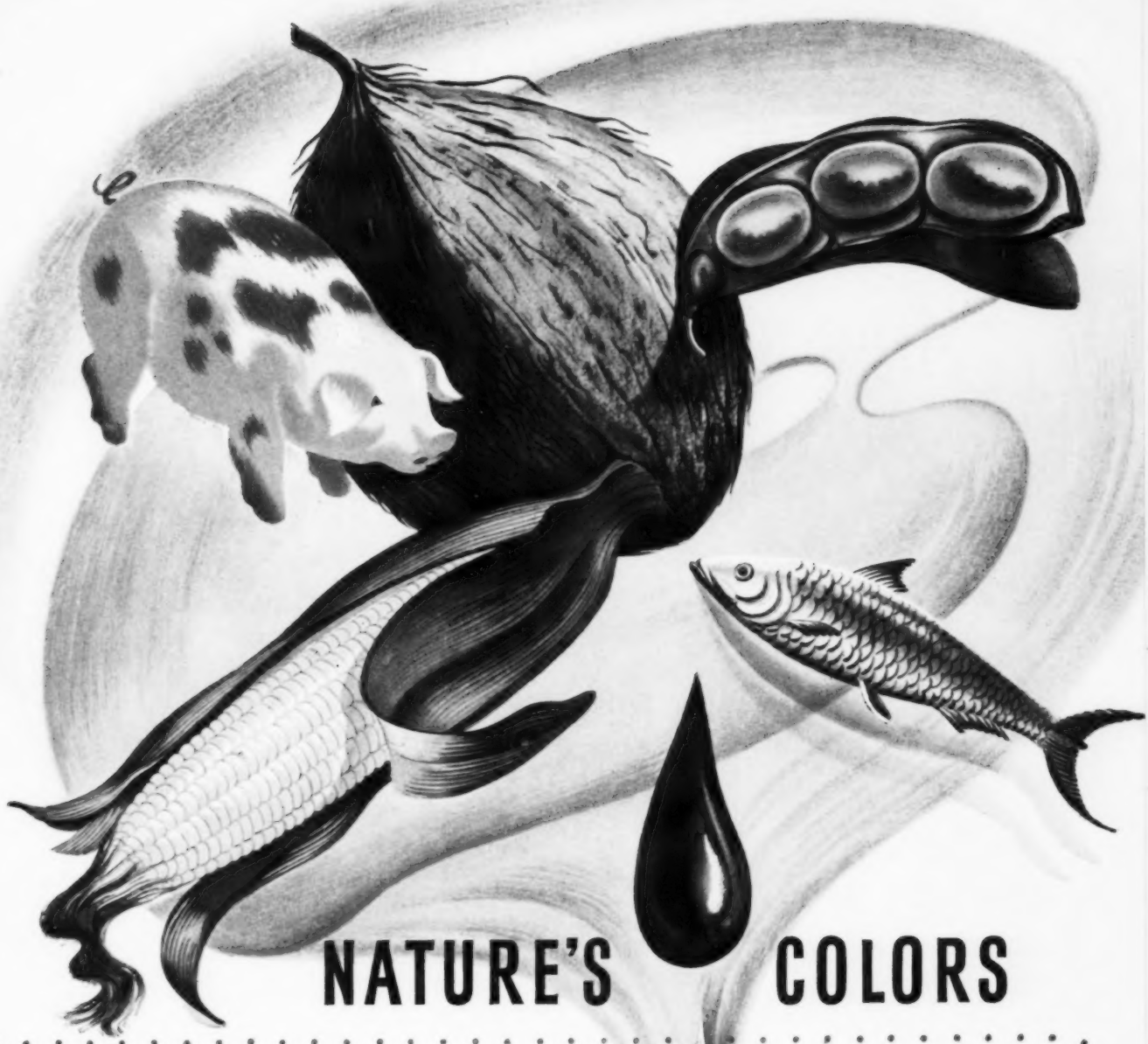

NATURE'S COLORS

can be controlled with...

Lowest color at lowest production cost is assured with FILTROL* Adsorbents because press cake losses are cut to the bone—you get more oil per press run and top quality production is maintained with minimum labor and equipment.

Special FILTROL is a scientifically controlled and chemically prepared, highly activated adsorbent. It is "tailor made" to fit a wide range of oils. It counterbalances the effects of nature's colors and balances your runs to uniform top quality.

If you are not now using FILTROL Adsorbents—get the facts—learn why the great preponderance of America's leading brands of "fatty oil" products depend exclusively on FILTROL Adsorbents. Technical information on request.

FILTROL CORPORATION • 634 South Spring Street, Los Angeles 14, California
Plants at Vernon, California, and Jackson, Mississippi

SPECIAL **Filtrol**

PRODUCTS OF RESEARCH AND DEVELOPMENT

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ORONITE
REG. U. S. CHEMICALS PAT. OFF.

THE NAME TO WATCH IN CHEMICALS

PURIFIED SULFONATE

—ONE OF FOUR BY ORONITE

PRIMARY APPLICATIONS	
USED IN:	PROPERTIES CONTRIBUTED BY PURIFIED SULFONATE:
Emulsifiers	Imparts polarity to oil phase
Soluble Cutting Oils	Emulsifying action
Textile and Leather Oils	Wetting and emulsifying agent
Emulsion Breakers	Ability to migrate between phases
Rust Preventives	Displaces electrolytes from metal surfaces
Fat Splitting	Improves contact between acid and fat

Purified Sulfonate, one of four different sulfonates made for particular industrial uses by Oronite, has polar properties as evidenced by its power to orient itself at oil interfaces, making it exceptionally efficient for the preparation of the specialized products listed above.

Laboratory samples are available if desired for your own experimentation. Please write for them, or for further information concerning specific applications, on your own business letterhead. No obligation will be involved.

TYPICAL TESTS:	
Content by Weight	
Sodium Sulfonates *	65%
Mineral Oil	29
Water	6
Inorganic Salts	None
Free Acidity	None
Free Alkalinity	Trace
Molecular Weight (Sodium Sulfonate)	440 (approx.)
Weight, lbs. per. gal.	8.6
Approximate pH Value	8.5

Clay absorption method

1178

ORONITE CHEMICAL COMPANY

Russ Building, San Francisco 4, California
White-Henry-Stewart Bldg., Seattle 1, Wash.

30 Rockefeller Plaza, New York 20, N.Y.
Standard Oil Bldg., Los Angeles 15, Calif.

78B

Perfumes and Autoxidation

Of a number of perfuming chemicals examined for their inhibiting action on autoxidation of soap, the following were most effective in decreasing order of activity: Vanillin, eugenol, methyl anthranilate, coumarin, benzaldehyde, citronellol, phenyl ethyl alcohol, and bromostyrene. The activity of the best inhibitors was in direct proportion to their darkening effect on soap. Vanillin has a marked effect as an inhibitor at a concentration of 0.1 per cent, while eugenol shows some activity at 0.5 per cent. It is possible that combinations of these with other aromatics may avoid the darkening effect to some extent. E. J. Better and A. Davidsohn. *Oil & Soap 23,* 245-7 (1946).

New Petroleum Sulfonate

A new water-soluble petroleum sulfonate, called "Hydronate 50," has been announced by L. Sonneborn Sons, Inc., New York. Developed by the Sonneborn research laboratories, "Hydronate 50" is composed of a neutral solution of 50 per cent highly purified low molecular weight petroleum sulfonates in water. It is said to have excellent properties for use in the manufacture of detergents for industry and homes. It is also employed to reduce fatty acid content in the manufacture of soap, soap powder and soap chips, and has many industrial applications as a wetting and detergent agent. further details may be obtained by writing to the White Oil and Petrolatum Division, L. Sonneborn Sons, Inc., New York 16, N. Y.

Clarification Temperature

The transition temperature at which a soap solution of a certain concentration becomes clear, called the Kraft point, was determined for a number of lithium, sodium, potassium, rubidium, and caesium soaps of long-chain fatty acids. The effect of dilution with distilled water or with dilute alkali carbonate solutions on this temperature was studied. The transition temperature increases with increasing chain lengths and decreases from lithium to potassium soaps, but increases slightly for the rubidium stearates. In some cases the hydrolysis and the dilution with alkali carbonate solutions have some effect on the transition temperature or Kraft point. M. Demarcq and D. Dervichian. *Bull. soc chim. 12,* 939-45.

Colloidal Structure

Lamellar micelles of amine salts and similar surface-active agents should not be regarded simply as neutral particles but as particles with feeble ionic properties. With mutual attraction of long chains and the polar nature of terminal groups, surface-active properties become appreciable. Orientation toward the solution phase produces a system with maximum surface. The particles contain many molecules, polar groups orienting toward the aqueous phase and giving ionic effects.

Along with lamellar micelles there are formed a small number of ionic micelles in equilibrium with larger particles. These micelles are assumed to be spherical except for distortion from motion. Packing of molecules in this sphere is determined by such factors as cross-sectional areas of hydrocarbon chains and the area occupied by head groups. These factors along with ionic repulsion determine the size of ionic micelles. The apparent range of sizes of ionic micelles is explained by the presence of chains of different lengths. M. L. Anson. *Ann. N. Y. Acad. Sci. 46,* 349-50 (1946).

German Oilseed Technology

Oilseed technology in Germany differs from ours in many respects. In general, the German technology appears to have lagged behind ours in the past decade, and bombings have so decimated the industry that many years will be required to rebuild it sufficiently to assume a position in world trade approaching that which it held in the decade preceding World War II. Damage to Germany's oilseed mills and refineries from military action varies greatly. Some mills were practically demolished, while others were left nearly intact. Most of the oilseeds required by the country are imported, so that most mills have equipment to handle a variety of seeds. W. H. Goss. *Oil & Soap, 23,* 241-4 (1946).

Big Drop In Soap Sales

SOAP production and sales reached a new low in the third quarter ending September 30, 1946 according to soap sales census reports made to the American Association of Soap and Glycerine Producers by some 70 member firms. The new low in the steady descent which has been going on for the last two years is considered to be the result of the shortages of fats and oils. During the third quarter, total sales of soap other than liquid soap were 494 million pounds, the lowest since 1937, and showed a marked decline (24.4 per cent) from last year's third quarter figure of 654 million pounds.

The slump in deliveries of liquid soaps was not as precipitous, deliveries in the third quarter of 1946 being only 780 thousand gallons, a drop of 87 thousand gallons (one per cent) from the second quarter of 1946. However, the census shows a decline of 61 thousand gallons (7.3 per cent) from last year's third quarter figure of 841 thousand gallons.

During the third quarter of 1946, the dollar value of non-liquid soap sales was $76,000,000 as compared with a $92,000,000 for the corresponding quarter of 1945. This represents a drop of about 16.8 per cent. Compared with sales in the previous quarter amounting to a little over $89,000,000, 3rd quarter sales represent a decline of about 14.3 per cent.

The dollar value of the liquid soaps sales in the third quarter was $866,000 compared to a value of $984,000 during the same period in 1945. This represents a decline in sales of $118,000 (about 12 per cent). When compared with the $1,216,000 figure for the second quarter of this year, a steep drop of $350,000 (28.8 per cent) shows up in dollar value of late summer sales.

Whereas higher prices for soap may slacken the pace of the downward trend in dollar sales as the year nears its end, most manufacturers say that although some additional amounts of soap may reach consumer channels, the current shortage will not end until the raw materials supply is in much better balance.

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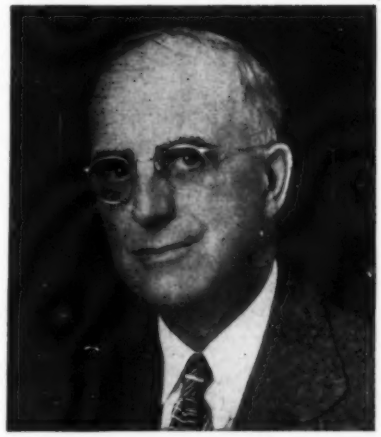
PRODUCTION Clinic

By DR. E. G. THOMSSEN, PH.D.

IT is puzzling at times to find a reason as to why manufacturers, making a varied line of products that are packaged in bottles, jars, cans or cartons have so many different styles or shapes to carry the same type product. Such a procedure is costly and troublesome. In many cases the reason is simply insufficient thought given to the standardization of such packages. Often there are as many different shapes as there are products; and several sizes of the same product are merchandised. No resemblance in design indicates that the various products are produced by the same manufacturer. Color schemes clash. In fact, we have frequently seen an array of products that looked worse than a patchwork quilt when put into the manufacturer's or merchant's display cases.

Another point which manufacturers sometimes overlook is the question of trademarks. Rather than going to the expense and trouble of copyrighting their brand name or design, they trust to luck that their goods will sell alright without attention to this detail. But slight consideration is given to identifying different products by some distinctive mark. Small manufacturers particularly forget this. They continue to grow and often find themselves out on a limb and involved in trade-mark difficulties when their wares become better known.

A uniform trade-mark on all products helps to sell the whole line. Such a mark should be standardized to identify the house making the products, and should be registered to protect the user. Standardization of packages and labels is a detail of business that is just as important on the production end as it is on the selling end. It has had more attention when supplies were normal than in these times of stress and scarcities when one is happy to take almost any bottle, jar or carton that is obtainable. These conditions are bound to change, however. Standardization should not be lost sight of in the meantime.



A few years ago, it was our privilege to spend a long period in England setting up a plant making a large and varied line of products. We had just gone through a siege of several years in standardizing packages and labels in this country and Canada. The job of assembling the same lines abroad did not seem to be a problem when we first tackled it. It did not take long for us to be disillusioned. We found that the English were years behind us in standardizing items like cap sizes, capacities, threads on bottles and tubes, diameters and other package characteristics we had come to expect as mere routine in the United States. The confusion which resulted from trying to line up suitable packages and packaging machinery resulted in much loss of time and patience. We gained a great deal more respect for standarization.

While the benefits of having uniform packages are well understood in the production end of the business, other branches very often overrule the sagacity of this procedure. Sales and advertising departments often lean toward fancy, special and beautiful packages to sell a product. Such a procedure has resulted in loss of much packaging material when the fad spent itself. There are also many cases in which fancy packages have proven to be impractical for our type of products. The lines which we cover do not include toiletries to any extent. To try to adapt the means used to sell cosmetics to our type of products, has not proven too successful.

The production departments, who have to make and put up a large variety of items, do not usually have long enough runs on any one item to warrant the purchase of fully-automatic equipment. If, however, a number of different products are packaged and cartoned in the same size container the volume often is large enough to justify such equipment. It is discouraging, especially in these days when labor is scarce to make many short runs by rudimentary methods when it is realized that the operations could be carried on more economically, neatly and satisfactorily with proper packaging machinery.

The end of the year when inventory time rolls around, is a good time to consider changes toward standardization. At such a time one is more conscious of the large number of items it takes to run a business. The present lush times will not be with us forever and those who plan for the period of greater competition that is ahead of us will be the ones who are better equipped to compete. During the lean years ahead it will be much easier and more economical to make changes in packages, pack-

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aging costs, and labels than it is now. Then too, packaging machinery will be more readily available and less expensive than it is at present. Labor costs will never recede to previous levels.

Standardization is simplification. Any move toward simplifying manufacturing procedure lowers production costs. Those companies in our field who complicate their business with too many items packaged in too many different styles of containers and sizes with the hope of increasing sales are very apt to be operating in the red. It costs money to complicate a business.

Water Chilling Unit

The Jensen Machinery Company, Bloomfield, N. J., produce an industrial chilled water unit for plants requiring chilled water in their operations. This unit very quickly cools water down to 32°F., with no icing up of the parts. This unit is featured by the patented "short gas flow" cooling principle. By this method the water is distributed as a thin film over the outside of corrugated surfaces from a distributing trough. The refrigerant, inside this corrugated compartment, cools the water practically instantly. The unit will not ice up because a uniform temperature is maintained by the short gas flow construction. In operating it, unusually high refrigerant back pressures are used, resulting in not only lower power costs to run the compressor but also increased tonnage of the compressor. The short gas flow sections, welded inside the corrugated stainless steel sheets to cause the gas to escape freely to the nearest point of outlet, permit the liquid refrigerant to be freed from non-working gas and produce uniformly cold water.

This cooler is built in capacities from a fraction of a ton to many tons to fit any requirements. While this equipment is offered to cool water and the maker does not mention other uses, it seems to us it is well designed to chill liquid soap rapidly before filtration. It might also be used in making liquid waxes to reduce the particle size of the emulsions.

New Wax Substitutes

Within the last few months we have been asked on several occasions regarding the character and source of certain waxes. The scarcity of carnauba wax has awakened much interest in substitutes. Those most frequently mentioned are the micro-crystalline waxes, ouricury wax, cauassu wax and synthetic waxes.

While most chemists are familiar with the micro-crystalline waxes, a few words of information regarding them may be timely. Micro-crystalline waxes are complex hydrocarbons having the approximate composition $C_{48}H_{98}$. They are obtained from petroleum. They were in great demand during wartime when they were used in the packaging of numerous materials subject to corrosion or spoilage. Those of us who had experience with packaging desiccated eggs and army rations recognize this wax as the coating over the carton to preserve the contents. Metal surfaces, ammunition and mechanized equipment also were protected by a tough, tenacious, waterproof, chemically-resistant coating of these waxes.

Various grades and shades of micro-crystalline waxes are available through several suppliers. They cannot be used as a complete substitute for carnauba in polishes and liquid waxes in spite of their high melting points, which usually range 155°-175° F. Partial replacement, usually up to about one-fifth is possible, but must be carefully carried out.

Ouricury wax, also termed licuri wax, consists of the fine powdery deposit found on the leaves of the ouricury palm tree (*Cocos coronata* Mart) which grows most abundantly in Bahia, Brazil. It is a fairly new wax that has not been available in any considerable quantity. Exports have grown from nothing in 1937 to a present yearly average of 2,000 tons. Ouricury wax is obtained in the same way and refined in a manner similar to that used for carnauba wax. In appearance it resembles gray carnauba wax, for which it is a good substitute. It is readily emulsifiable though it contains more resinous material. Its melting point is 178°-180° F. as against carnauba's 181°-183° F. The so-termed "Franklin" brands are most satisfactory for use in liquid waxes.

More recently cauassu wax, also termed cauacu, has had some publicity. This wax, pronounced cow-ah-soo, meaning big leaf, comes from the cauassu leaf which is about 3 feet long and 1 foot wide. It grows close to the ground, thickest and tallest, in the thick of the jungles of the Amazon Valley of Brazil. It belongs to the family Marantacea, genus galathea, species lutea. Nelson S. Kraggs, a research chemist of Cincinnati, is given credit for finding the locality where it grows in abundance. The wax is found on the leaves of the plant which are collected, spread out to dry in the sun until the wax is dry enough to flake off. The flakes are then melted down and handled very much like carnauba.

Cauassu wax melts at about 186°F., contains 0.22 per cent moisture, has an acid number of 12.3 and a saponification number of 29. The plant can easily be cultivated. One crop of wax is produced the first year from cultivated plants and two crops in subsequent years. As its properties closely resemble those of carnauba, it is potentially a promising source of supply for a suitable natural wax for carnauba substitution in future years when the present rudimentary methods of producing it are modernized.

Besides these waxes, research has produced a series of synthetic wax-like products which possess properties that permit their substitution for carnauba wax. Unfortunately these have not run uniform and their compositions are trade secrets. Then too, supplies have been short. The I. G. Farben Industrie Alktiengesellschaft also has covered the production and application of many synthetic waxes by patents in Germany. These come as hard, soft and special waxes varying in melting points from 223°F. downward. They form high lustre polishes which do not finger-mark. Methods for producing these waxes are now open to American manufacturers and they will undoubtedly appear on the American market in increasing quantities.

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Pressure Filter Booklet

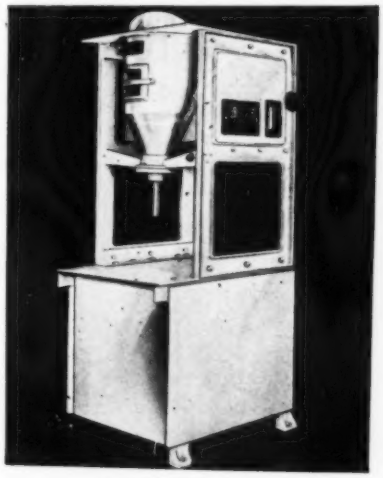
A new booklet describing the Davis Clearflow "200" pressure leaf type filter had just been released by Davis Filtration Equipment Co., New York. The bulletin discusses the features of the "200," sizes of which range from 10 to 350 square feet and over of filter area. The filter features a quick-lock door and portable cleaning rack and is used with or without various filter aids for clarifying, and polishing to remove very fine turbidities as well as for removing emulsified and free oil from condensate. Another feature claimed for the "200" is its ability to remove turbid matter having the same specific gravity as the liquid being filtered, a feature not available in mechanical type clarifiers. Copies of the booklet may be obtained from the company.

New Emulsions Booklet

A new edition of its booklet on emulsions is now being offered by Carbide and Carbon Chemicals Corp., New York. The 72-page book presents over 113 practical formulas and methods for preparing cosmetic and industrial emulsions of oils, waxes, fats, and greases. Additions and revisions have been made to the material given in previous editions, including description of the uses of "Tergitol" wetting agents, "Carbowax" polyethylene glycol emollients, and "Cellosize" hydroxyethyl cellulose thickener in new emulsion formulas. The book also describes the use of many of the recently developed amine soaps and cationic dispersants used as emulsifying agents. Copies may be obtained from the company.

New Auger Type Filler

Announcement of a new auger-type package filler was recently released by George G. Rodgers Company, New York. The new Rodgers filler is said to handle pulverized, granular, crystalline or paste materials and fills all types of rigid or flexible containers. The filler has a range from 1/3 ounce to 10 pounds, height is 79", floor space 29" x 36", shipping weight approximately 700 pounds. Among the features are: simple dial adjustment controls package fill time; auger speed is variable and independent; package transfer time can be set by a dial to



accommodate the slowest or fastest operator; settings for transfer time and filling speed are completely independent of each other, cams being eliminated; the bottom portion of the machine has no moving parts, all mechanisms being above the auger and tube, thus eliminating clogging of bearings; all moving parts are completely housed, and an emergency switch regulates shut-off. No tools are necessary to regulate the variables for a changeover.

Small Container Filler

MRM Co., New York, have announced that deliveries are being made on their new filling machine for containers of perfume, toilet preparations, liquid soap, and shampoos. The filler, known as "Tru-Fill," is of the tray type with 12 spouts and operates with a speed of 100-160 containers per minute, handling from fractional-ounce to two-ounce containers.

Form Roubechez Import Co.

On November 1st, 1946, Arnold F. Anderson, formerly vice-president of Rene Forster Co., New York, and Frank H. Sloan began business as Roubechez Import Company at 8 East 12th St., New York 3, N. Y. The company is in a position to offer a complete line of essential oils, aromatic chemicals, and perfume bases.

New Weston Thermometer

A new all-metal thermometer known as the "Max-Min," which indicates the maximum or minimum temperatures reached, has been introduced by the Weston Electrical Instrument Corporation, Newark, N. J. Similar in other respects to the standard Weston all-metal thermometer, the new "Max-Min," has an auxiliary red index which is manually set. When a record of the lowest temperature reached is desired, this index is placed to the low side of the temperature pointer. The pointer will move the index to the lowest temperature reached during any operating period, and the index will remain at that low point until manually reset. For a record of the highest temperature reached, the index is simply set at the high side of the pointer. This new thermometer is available in two models, 221M and 222M, with scale diameters of three and five inches respectively. It is available in all the usual ranges, and in stem lengths from two and one-half to 18 inches.

Packaged Unit Extractor

V. D. Anderson Co., Cleveland, manufacturers of oil expellers, have announced the addition of solvent extraction equipment to their line of oil milling equipment. It is a complete packaged unit for solvent extracting oils and requires no housing.

Thickener From Wood Pulp

A new water-soluble cellulose derivative thickening agent was announced last month by George G. Johnston Co., New York, as obtained by etherifying high alpha wood pulp with a mixture of different etherifying agents. "Ethulose" is used as a film-forming material, sizing agent, binder, adhesive, preservative colloid in aqueous solutions, and should find possible application in giving viscosity to liquid soaps. It is supplied in the form of white or slightly yellow flakes, which are said to be odorless, tasteless, non-toxic, and to resist fats, oils, and alkalies. "Ethulose" is packed in 55 lb. cases and is available in tonnage quantities.

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Grease-removing Solution

A composition for cleaning metal, plastic, or earthenware parts, particularly from grease and carbon deposits, has the composition: Solvent (2/3 ethylene dichloride, 1/3 propylene dichloride) 20 per cent, vegetable oil soap 10 per cent, penetrant such as a tar-acid oil 33 per cent, butyl alcohol 8, ethyl alcohol 6, rosin 1, sodium dichromate 2, and water 20 per cent. The parts to be cleaned are immersed in the mixture, which may be used cold and without agitation. G. W. Gregg, to Bendix Aviation Corp. U. S. Patent No. 2,386,789.

Paint Remover

A nontoxic paint remover contains an oil-soluble component comprising a primary, secondary, or tertiary amine with at least 8 carbon atoms in the molecule. From 3 to 10 per cent of this compound is dissolved in a mixture of an aliphatic alcohol containing 3-5 carbon atoms, a nontoxic hydrocarbon solvent having a gravity of 55-65°A. P. I. and a boiling range of 180-500°C., and a small amount of paraffin or vegetable wax. J. C. Roediger, to Standard Oil Development Co. U. S. Patent No. 2,388,082.

Continuous Soap Process

A continuous saponification process requires a relatively low reaction temperature, obviates the use of anhydrous caustic soda, and employs a relatively dilute aqueous caustic alkali with an appreciable quantity of inert recoverable diluent. Discoloration of the product is avoided and maximum glycerol recovery obtained by maintenance of sufficient pressure in the reaction zone to prevent vaporization loss. Suggested diluents are Skellysolve "K," kerosene, naphtha, gas oil, toluene, xylene, trichlorobenzene, or tetrachloroethane. The amount of diluent employed is from 50 to 75 per cent by weight of saponifiable material. The soap phase is spray dried in a flash chamber maintained at a total pressure of 12 mm. of mercury. The fine white soap powder is removed continuously from the bottom of the chamber, and the effluent vapors are separated by fractional condensation. Glycerol recovery is 96.6 per cent of theoretical. The diluent is returned for reuse. J. K. Gunther, to Industrial Patents Corp. U. S. Patent No. 2, 401,756.

Cleaner and Sterilizer

A cleaning and sterilization agent comprises trisodium phosphate 17-38 per cent, tetrasodium pyrophosphate 12-38 per cent, and a double salt of trisodium phosphate and sodium nitrate 25-75 per cent. Other compounds such as potassium nitrate 5-15 per cent of diatomaceous earth 40-40 per cent may be added to secure an especially active insecticide or cleaner, respectively. The mixture is used in aqueous solution containing 0.35-3.5 per cent by weight of the composition. F. E. Pierce. U. S. Patent No. 2,380,259.

Salt Water Soap

Stir 33 parts of 41° titer tallow soap with 34 parts of water at 180° F., add 16.5 parts of dry sodium resinate and 16.5 parts of tetrasodium pyrophosphate. When smooth in texture the soap is poured into a frame, solidified and cut into bars. A soiled wool fabric, after washing in a 3 per cent solution of this soap in sea water, had a reflectance difference from unsoiled fabric similarly treated of 1.9 per cent, when examined with the Hunter reflectometer. The reflectance difference was 20.4 per cent when the sodium resinate was replaced by an equal weight of tallow soap. B. S. Van Zile, to Hercules Powder Co. U. S. Patent No. 2,402,473.

Dish Washing Detergent

A detergent briquet for use in mechanical washing equipment for washing dishes, milk cans, etc., is compounded of sodium silicate, either trisodium phosphate or soda ash or both, and water so as to contain about 1-25 per cent by weight of sodium silicate and 30-40 per cent of water. Mathieson Alkali Works and H. G. C. Fairweather. British Patent No. 570,171.

Synthetic Detergent

A synthetic detergent consists of sodium salt of a monoalkyl ester of a monocarboxylic aromatic sulfonic acid selected from the group consisting of sulfobenzoic acids and sulfosalicylic acids in which the alkyl group has not less than 8, and not more than 12 carbon atoms, and is attached to the carboxyl group. E. W. Gluesenkamp and M. Kosmin, to Monsanto Chem. Co. Canadian Patent No. 436,776.

Polishing Paste

A metal polish comprises a paste of whiting, soap, and milk, to which fractional quantities of butter, soda ash, glycerol, and an alcohol have been added. R. Dreyfus. Canadian Patent No. 436,697.

German Hand Creams

Although most of the protective hand creams used in Germany appear under proprietary names, it has been possible to get a few of the formulas. One, made by the Draigerwerk for their own employees, had the following composition: Soap 1100 parts by weight, gum arabic 200, lanolin 200, glycerine 100, and water 3000.

A cream made by the I. G. to provide protection against solvents, was composed of an ester of adipic acid and 1,3-butyl glycol. Another cream used by workers exposed to pastes containing formaldehyde, contained 10 per cent of urea in the form of a fine powder mixed with petroleum jelly or lanolin.

The I. G. also had a special hand-cleaning soap for use by persons liable to come into contact with chlorinated naphthalenes. This was composed of 70 per cent of diglycol monomethyl ether, 10 of triethanolamine, and 20 per cent of the sodium salt of a higher aliphatic sulfo acid, together with a little perfume. *Chem. Trade J. & J. Chem. Engineer 119*, 190 (1946).

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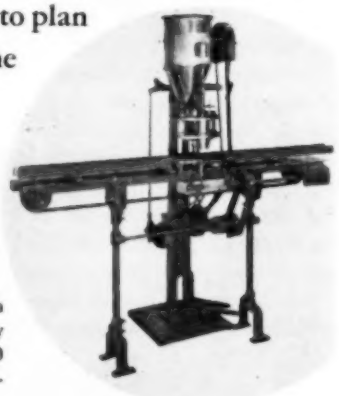

Right—Triangle Model SPA Filler for caustics, cleansing powders, etc., with conveyor. Fully automatic. 40 to 60 cans per minute *accurately* filled.

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NEW PATENTS

Conducted by

Lancaster, Allwine & Rommel

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PATENT AND TRADE MARK CAUSES

402 Bowen Building, Washington, D. C.

Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired to Lancaster, Allwine & Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

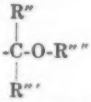
No. 2,409,056, Soap Composition, Patented October 8, 1946 by Herbert Kenneth McClain, Wyoming, Ohio, assignor to The Procter and Gamble Co., Ivorydale, Ohio. The process of inhibiting the development of rancidity and discoloration in a granular soap product prepared from a fat formula containing a minor proportion of rosin, which comprises incorporating with the soap a polyethylene polyamine of the formula.

$H_2N{\cdot}C_2H_4{\cdot}(HN{\cdot}C_2H_4)_x{\cdot}NH_2$

wherein x is a whole number from 1 to 3.

No. 2,409,678, Preparation of Soaps, patented October 22, 1946 by Clement Hutton Hamblet, Gordon Heights, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington. In a process for the preparation of heavy metal salts of an organic acid, the step which comprises reacting a heavy metal with a compound selected from the group consisting of organic acids containing unsaturated and at least eight carbon atoms and their esters in the presence of oxygen and an antioxidant selected from the group consisting of para-hydroxydiphenyl phenols, hydroquinone, para-aminophenol, p, p'-di-aminodiphenylmathane, 2,4 meta-toluylene diamine, diphhenylamine, O- and p-ditolyamines, phenyl-alpha-naphthylamine, phenylbeta-naphthylnitrosamine, symmetrical di-beta-naphthyl-para-phenylenediamine, symmetrical di-phenyldiaminoethane, 2,4-diaminodiphenylamine, condensation products of aniline with acetaldehyde of alphanaphthylamine with aldol, of aniline with acetone, and of diphenylamine with acetone; the antioxidant being present in sufficient amounts to prevent the formation of CO_2 during the reaction.

No. 2,409,683, Polish Compositions, patented October 22, 1946 by Benjamin Wilson Howk, John Richard Roland and Harvey Herbert Hoehn, Wilmington, Del., assignors to E. I. du Pont de Nemours & Co., Wilmington. A polish composition comprising a synthetic wax obtained by the interaction of ethylene with an organic compound represented by the formula ROR' wherein R and R' are free of olefinic unsaturation and are selected from substituents of group consisting of alkyl, aryl, aralkyl, alkaryl, acyl and the substituent



in which R", R"', and R"" are free of olefinic unsaturation and are selected from the group consisting of alkyl, aryl, aralkyl and alkaryl and R" and R"' group including hydrogen, the interaction being effected at a temperature between 50 and approximately 300°C. under pressure above 20 atmospheres and in the presence of a catalyst selected from the group consisting of peroxy catalysts and oxygen, there being present in the polish in parts by weight from 1 to 5 parts of said synthetic wax to from 5 to 1 parts of a soft wax.

No. 2,409,718, Composition for Cleaning Dentures, patented October 22, 1946 by Foster Dee Snell, New York, and Kurt W. Haeseler, Forest Hills, N. Y., assignors to Foster D. Snell, Inc. A denture cleaning composition comprising a dry free flowing powder of the following composition: sodium salt of 2,2' dihydroxy 3,5,6-3', 5', 6' hexachlorodiphenylmethane 0.5-2 parts, sodium perborate 5-10 parts, tetrasodium pyrophosphate 20-70 parts, sodium lauryl sulfo-acetate 1.5-5 parts, tricalcium phosphate 2-3 parts, and sodium chloride as diluent to make 100 parts total, all proportions being by weight.

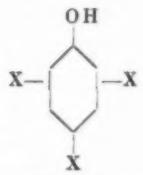
No. 2,409,806, Synthesis of Nicotinic Compounds, patented October 22, 1946 by William Shive, Urbana, Ill., and Richard A. Glenn, Mount Lebanon, Pa., assignors to Pittsburgh Coke & Chemical Co. The process of producing 3 cyano pyridine by heating a mixture of potassium cyanide and sodium cyanide with a hyridine sulfonic acid salt of the following formula

X being selected from the group consisting of alkali metals and alkaline earth metals and recovering the 3 cyano pyridine thus formed.

No. 2,409,862, Production of Chlorine Dioxide, patented October 22, 1946 by Willis S. Hutchinson, St. Paul, Minn., assignor to The Mathieson Alkali Works, Inc., New York. In the generation of chlorine dioxide by reacting hydrochloric acid with a chlorine-containing compound of the class consisting of the chlorites and chlorates of the alkali and alkaline earth metals, the improvement comprises reacting the hydrochloric acid, in gaseous form and in admixture with an inert diluent gas, the chlorine-containing compound being in solid form.

No. 2,410,168, Hand Cleaner, patented October 29, 1946 by Werner E. Kleinicke, Manhasset, N. Y., assignor to The Johnson-March Corporation, New York. A hand cleaner comprising an emulsion of white mineral oil and stearic acid in an aqueous solution containing diethylene glycol stearate, diethylene glycol laurate and diethylene glycol.

No. 2,410,281, Parasiticidal Compositions, patented October 29, 1946 by Fred W. Fletcher and Eugene E. Kenaga, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich. An ovicidal composition for application to living trees including a dormant spray oil and as an active toxicant a compound having the formula



wherein one X represents a nitro radical, another X represents chlorine, and the third X is selected from the group consisting of chlorine, alkyl, cyclohexyl, and hydrogen.

Ethylene Polymers

Ethylene is polymerized in the presence of certain oxygen compounds as catalysts, to form products which may variously be wax-like, drawing lubricants, wetting agents, or detergents. Soft to hard waxes may be obtained said to be useful as substitutes for carnauba wax. W. E. Hanford and J. R. Roland, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,402,137.

Cleaner for Steel Tanks

Effective cleaning for a number of applications is claimed for a new series of cleaning agents marketed under the name of "Ferrex" by Turco Products Inc. of Los Angeles, California. Used as hot tank cleaner, the product is claimed to remove carbon, paint, grease, gums, heat-hardened resins, and heavy dirt from steel and other ferrous metals.

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New Surface-tension Method

The method for the determination of surface tension using a rectangular wire loop was applied to the investigation of the Gibbs surface layer of soap solutions at 40°C. The force applied to the loop was plotted against the distances travelled while the loop was being pulled from the interior of the solution to the point of rupture of the surface layer. The curves pertaining to several concentrations of the investigated substance were obtained, both for solutions containing only one surface-active compound and for those containing substances that give mixed surface layers.

The curves display three characteristic portions. The first is a straight line, and the tangent of its angle with the axis of abscissas increases with the surface tension, has a constant value for a given surface tension, and is independent of the structure of the surface-active compound and its state of dispersion. The straight portion is followed by a downward slope that indicates the decrease in volume of the liquid bounded by a prism of the same height as that of the filament below the surface and of the same cross section. The next portion of the curve consists of a plateau that indicates film formation and extends to the point of rupture; the length of the plateau depends on the speed of pull.

Three different types of curves are obtained depending on the concentration of soap in the solution. Maximum length of the plateau portion is reached at the concentration corresponding to micelle formation and is related to foaming power and stability of foam. This part of the curve also indicates the concentration of active molecules in the surface region and the ease of diffusion from the interior of the liquid to the surface. R. Matalon. *Compt rend. 222*, 1213-15 (1946).

◆

The Degreasing of Fabrics

A sample of cloth charged with a known quantity of saponifiable fat was washed, and the fat content of the cloth, after drying, was determined. A piece of cotton charged with a mixture of tallow and grease and washed at 90°C. with arachidic soap lost 23 per cent of its grease content after 1 minute, and 28 per cent after 2 minutes. Longer washing was without effect. Repeated washings and dryings did not eliminate any additional greasy substance. Brushing between the washings, in order to change the surface texture, had only a very limited degreasing effect.

Soda ash solution at a concentration of 4 grams per liter removed 28 per cent of the grease from cotton after three 5-minute washings at 90°C. Brushing in between increased the cleansing index to 38 per cent. Rayon soiled and cleaned in the same manner, was freed of 82 per cent of fat after 5 washings—the first washing eliminated only 37 per cent.

The percentage of grease removed by washing depends on the material, the quality and quantity of

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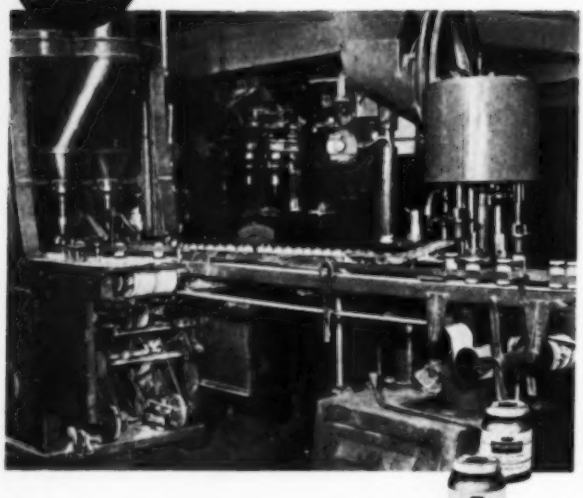

The S & S HG-84 Duplex Heavy Duty Filling Machine answers their problems. Three sizes of jars are filled on one machine and fed into the automatic capping unit at the rate of about 60-72 per minute. While filling with speed and accuracy the HG-84 vibrates to insure complete fill.

The HG-84 can also be supplied with "Auger-Vac" the auger-vacuum system for dustless fill and tight pack — is available in various types. It fills not only jars, but cans or other air-tight containers with pulverized coffee, powdered milk, ice cream mix, malted milk, cocoa or numerous similar products, in the amounts desired. Full particulars on request.

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grease, the detergent, the temperature, and mechanical action. Degreasing by washing is always incomplete, while mineral pigments are completely removed. Soda ash degreases better than soap. A kitchen towel laundered in the customary manner with soda ash and soap, was freed of 40 per cent of its grease, as determined by ether extraction. This showed that laundering is not identical with degreasing. A. Lassieur. *Corps gras, savons* **2**, 68-71.

Sulfonate Surface Tension

The equilibrium surface tensions of solutions of dodecane sulfonic acid and of magnesium octane sulfonate, determined at 40°C., indicate the marked role the positive ion plays in micelle formation. Both equilibrium and non-equilibrium interfacial tensions were measured for solutions of sodium decane, dodecane, and tetradecane sulfonates against benzene. The critical concentration for micelle formation with benzene-saturated solutions is lower than that for aqueous solutions of the corresponding sulfonates not containing benzene. The decrease is a function of carbon chain length. Benzene appears to aid in micelle formation. E. C. Lingfelter, O. L. Wheeler, and H. V. Tartar. *J. Am. Chem. Soc. 68*, 1490-3 (1946).

Preservation of Fats

Animal and vegetable fats are stabilized by hydrogenating a mixture of the material with a complex mixture containing tocopherol which has been obtained from the crude or partially refined scum or sludge separated from the inert gas used for vacuum deordorization of an animal or vegetable oil containing tocopherol. Distillation Products Inc. and H. E. Potts. British Patent No. 570,398.

Oil from Sorghum

Fourteen varieties of *Andropogon Sorghum* var. *vulgaris* were subjected to fractional solvent extraction. An average yield of 0.32 per cent of wax and 2.76 per cent of oil was obtained. The grain oils varied from a light amber to green, and contained 2.5 per cent of non-saponifiable matter. The mixed fatty acids obtained from the oils had an average melting point of 28.9°C., a neutralization equivalent of 278.8, and iodine value of 120.8. The mixed fatty acids contained an average of 46.5 per cent of linoleic, 39.5 oleic, 7.8 palmitic, and 4.7 stearic acid. F. A. Kummerow. *Oil & Soap 23*, 273-5 (1946).

Chinese Tallow Fruit

Analysis of the fruit of the Chinese tallow tree which grows in Texas showed it to contain 20.3 per cent of oil, 23.9 of tallow, 11.3 of meat, 8.1 of fiber, and 36.4 of shell. A sample of tallow had an iodine number of 16.3, acid number of 11, saponification number of 218.5, melting point of 54.4, and softening point of 52.5°C. A sample of oil had a refractive index at 25°C. of 1.4827, specific gravity at 15°C./15°C. of 0.9413, acid value of 10.0, saponification value of 203.9, 1 per cent of unsaponifiable, and iodine value of 183.3. W. M. Potts and D. S. Bolley. *Oil & Soap 23*, 316-18 (1946).

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Surgical Uses of Soap

A new chapter, "Surgical Uses of Soap" by Dr. E. P. Jordan, was recently added to the book, "Medical Uses of Soap," published by Dr. Morris Fishbein about a year and a half ago. The entire edition of this book was bought, at the time of release, by the Procter and Gamble Co., Cincinnati, for complimentary presentation to the medical profession. The new chapter, chapter ten, can be inserted in the book. Its distribution is limited to the medical profession.

Chem. Salesmen Nominate

The Salesmen's Association of the American Chemical Industry, New York, recently presented nominations for 1947 officers. The nominating committee selected James E. Ferris, Niagara Alkali Co., as president; J. Robert Fisher, Fisher Chemical Co., vice-president; Wm. C. Harmon, Jr., Calco Division, American Cyanamid Co., treasurer; and John Seidler, Whittaker Clark & Daniels, Inc., secretary. Executive committee members nominated for 1947-1950 were Charles P. Walker, Jr., Citro Chemical Co., and Leon W. Miller, Barrett Division, Allied Chem. & Dye Corp.

Calgon Adds Two in Sales

Calgon, Inc., Pittsburgh, recently added two new men to the Banox division field sales staff. J. G. Ripatra is located at the Detroit office covering Detroit, Grand Rapids, Chicago, Milwaukee, and other cities in that area. Richard J. Skillman is located at the Philadelphia office covering the eastern seaboard.

P & G Fellowship

Procter and Gamble Co., Ivorydale, Ohio, have announced the establishment of a fellowship in chemistry at the University of Pittsburgh for graduate study in the field of fat chemistry.

Drew Appoints Valko

Dr. E. I. Valko, internationally known in industrial research fields, was recently appointed director of research for E. F. Drew & Co., Boonton, N. J. Dr. Valko's field has been the chemistry of colloids, proteins, elastomers, textile fibers, germicides, and surface-active agents. He received his

DR. E. I. VALKO

Ph. D. at University of Vienna in 1926 and was in turn research associate to the Medical Faculty of the University, then chemist at the central research laboratory of I. G. Farbenindustrie. He has been in the United States for some years in various industrial research positions.

van Ameringen Named

A. L. van Ameringen, president of van Ameringen-Haebler, Inc., New York, was recently elected treasurer of the National Committee for Mental Hygiene. Mr. van Ameringen, who has been active in the mental hygiene field for some time, succeeds the late Harry P. Robbins, who served in the post for eleven years.

The new soap creation pictured here was recently released by Vida-Ray division of Affiliated Products, Inc., Jersey City. Three cakes of Fnerch-milled cold cream soap done in rose geranium petal mould and fragrance are packaged in a box bedecked with rose geranium blossoms against a black lacquered background, and are priced at $1.25.

Speel Joins Alrose

Henry C. Speel, formerly with the research department of General Mills, has joined the staff of Alrose Chemical Co., Providence. He was at one time associated with the Atlas Powder Co., Wilmington on the development of uses for "Mannitol" and "Sorbitol." Mr. Speel's work with Alrose will be with surface-active agents and chemical specialties in technical service and market development.

Deny Rugfoam Trademark

Acting on an Appeal by West Disinfecting Co., New York, the Commissioner of Patents, 64 USPQ 489, affirmed the decision of the Examiner of Trade-Marks denying registration of "Rugfoam" as a trade mark applied to a cleaning preparation for rugs, upholstery and the like. The Examiner had refused registration of the mark on the grounds that it was confusingly similar to the trade mark, "Fabrikfoam" registered in 1935 for use in connection with "a concentrated upholstery and rug shampoo." As a further ground of rejection, the Examiner had held the mark unregisterable as being descriptive. "The marks differ in appearance and sound, but are practically identical in significance; and their concurrent use on goods of the same descriptive properties would be likely to cause the confusion, mistake, and deceit which the statute prohibits." In affirming the decision of the Examiner, on the first point, the Commissioner reversed it as to the second, holding that the involved terms were highly suggestive but that the expression "Rugfoam" was not descriptive.

Fritzsche Detroit Branch

According to an announcement released November 29th, Fritzsche Brothers, Inc., New York, have opened a new branch office at 1514 Dime Building, Detroit. It will be under the supervision of T. Fred Baker.

Annual PEA Dinner

The annual dinner of the Professional Exterminators Association, New York, was held Dec. 9 at the Hotel Brewster, New York, it was announced by E. T. Thorpe, secretary.

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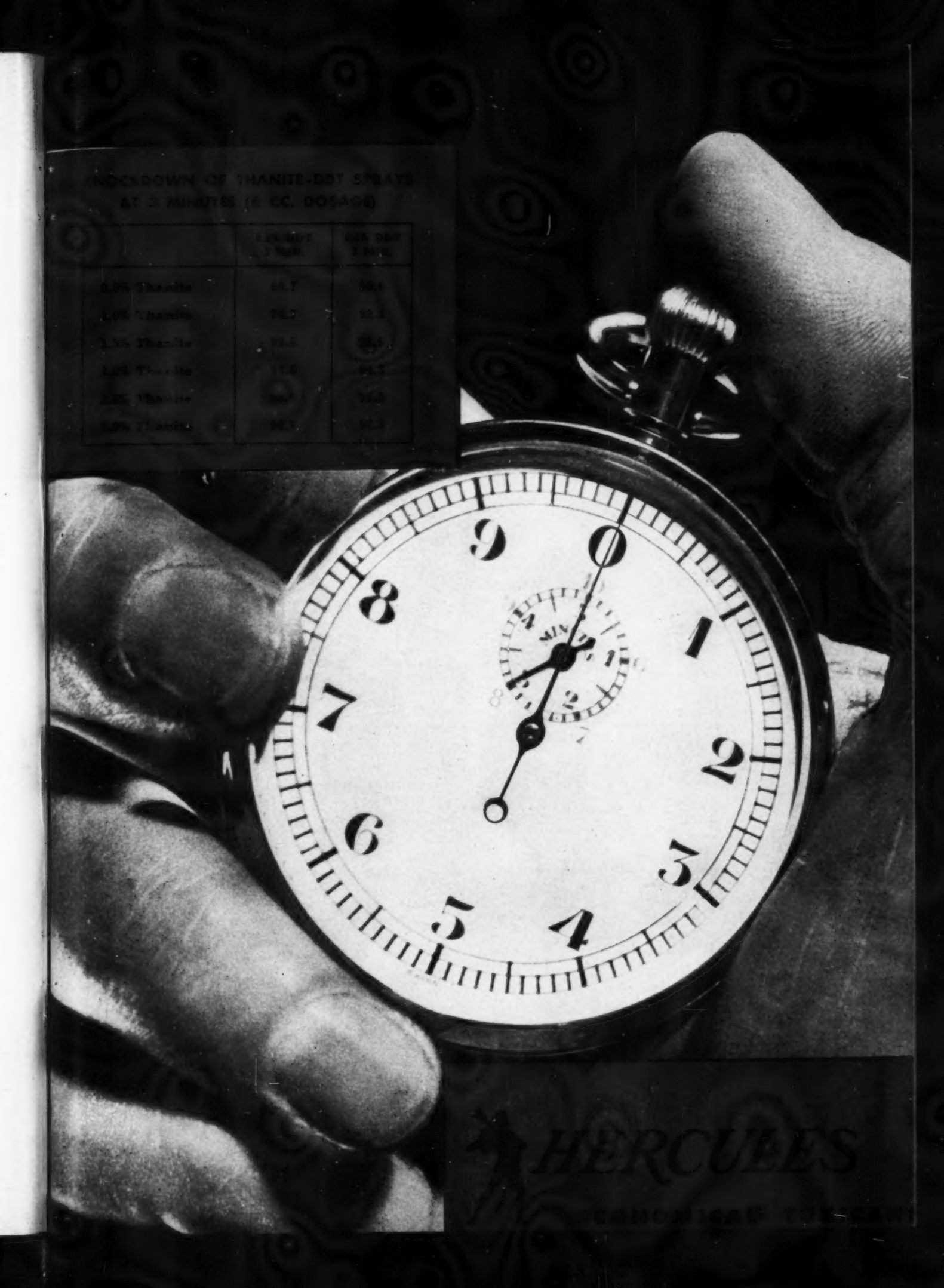
*Reg. U. S. Pat. Off. by Hercules Powder Company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Manufacturers of insecticidal aerosols are invited to write for complete information relative to "Freon-11" and "Freon-12" and the application of these safe propellents in the production of aerosol insecticides for commercial resale. Address: Kinetic Chemicals, Inc., Tenth and Market Streets, Wilmington, Delaware.

Safety is the first requisite of an insecticidal aerosol . . . "Freon" is a safe propellent.

and Accepted Insecticidal Aerosols

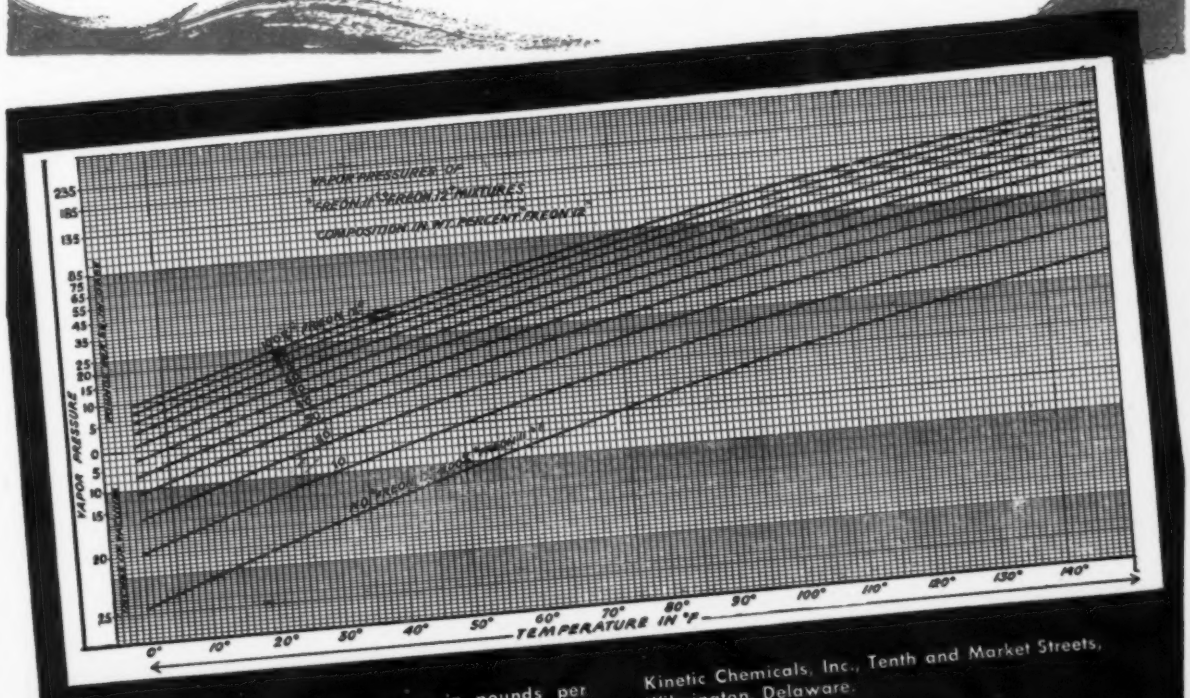

VAPOR PRESSURES OF
"FREON-11"/"FREON-12" MIXTURES
COMPOSITION IN WT. PERCENT FREON
VAPOR PRESSURE
TEMPERATURE IN °F
0° 10° 20° 30° 40° 50° 60° 70° 80° 90° 100° 110° 120° 130° 140°

Chart illustrates vapor pressure in pounds per square inch of "Freon-11" and "Freon-12" mixture composition in weight per cent of "Freon-12" at various temperatures. Large scale copies of this chart will be sent free upon request. Write or wire:

Kinetic Chemicals, Inc., Tenth and Market Streets, Wilmington, Delaware.

KINETIC

FREON

Reg. U. S. Pat. Off.

safe propellents and refrigerants

FREON IS A KINETIC REGISTERED TRADE MARK FOR ITS FLUORINE REFRIGERANTS AND PROPELLENTS

"FREON" Safe Propellents

"FREON-11"—particularly desirable as a carrier of DDT, which is more soluble in this chemical than in "Freon-12." Used with "Freon-12."

"FREON-12"—the only propellent used commercially to date. More than one hundred and fifty million pounds of "Freon-12" have been used in the past fourteen years without accident.

PYR

PROGRESS

• • • The six months which have elapsed since the initial announcement of the New Pyrenone Concentrate has been devoted to further intense entomological investigation of formulation behavior and adaptation to various problems of insect control. Simultaneously there has been increasingly wide-spread if not large scale use under practical conditions.

Space limitations forbid detailed discussion of these results here, but two facts stand out with startling prominence.

First, it can be stated without reservation that the claims originally made for Pyrenone #20 New and the intimations regarding the probable value of other Pyrenones for industrial sprays, aerosols, etc., now appear to have been understated to an almost ridiculous degree. Both further tests and practical use have demonstrated a value for these Pyrenones well in excess of early and conservative estimates, and at the same time have failed to disclose any disadvantages or shortcomings connected with their use.

Second, our further entomological studies are demonstrating that Pyrenones combine stability and residual killing power with such an extraordinary range of effectiveness as to open up hitherto unsuspected fields of usefulness. Specific claims and recommendations in their new fields will be made only after completion and confirmation of current studies, but the general picture is already clear.

While we cannot claim to answer any and all questions regarding Pyrenones and their application to all insect control problems, we can unreservedly recommend them to the immediate attention of all insecticide manufacturers with the statement that for many purposes the proper Pyrenone, properly used, will be found to be entirely safe and unobjectionable and more effective and economical than any other available materials.

DODGE & OLCOTT, Inc.

D.O

RENONE

THE FOLLOWING SUMMARY OF PYRENONE USES AND ADVANTAGES IS CAREFULLY RESTRICTED TO THOSE WHICH HAVE BEEN THOROUGHLY AND UNEQUIVOCABLY PROVEN.

PYRENONE USES

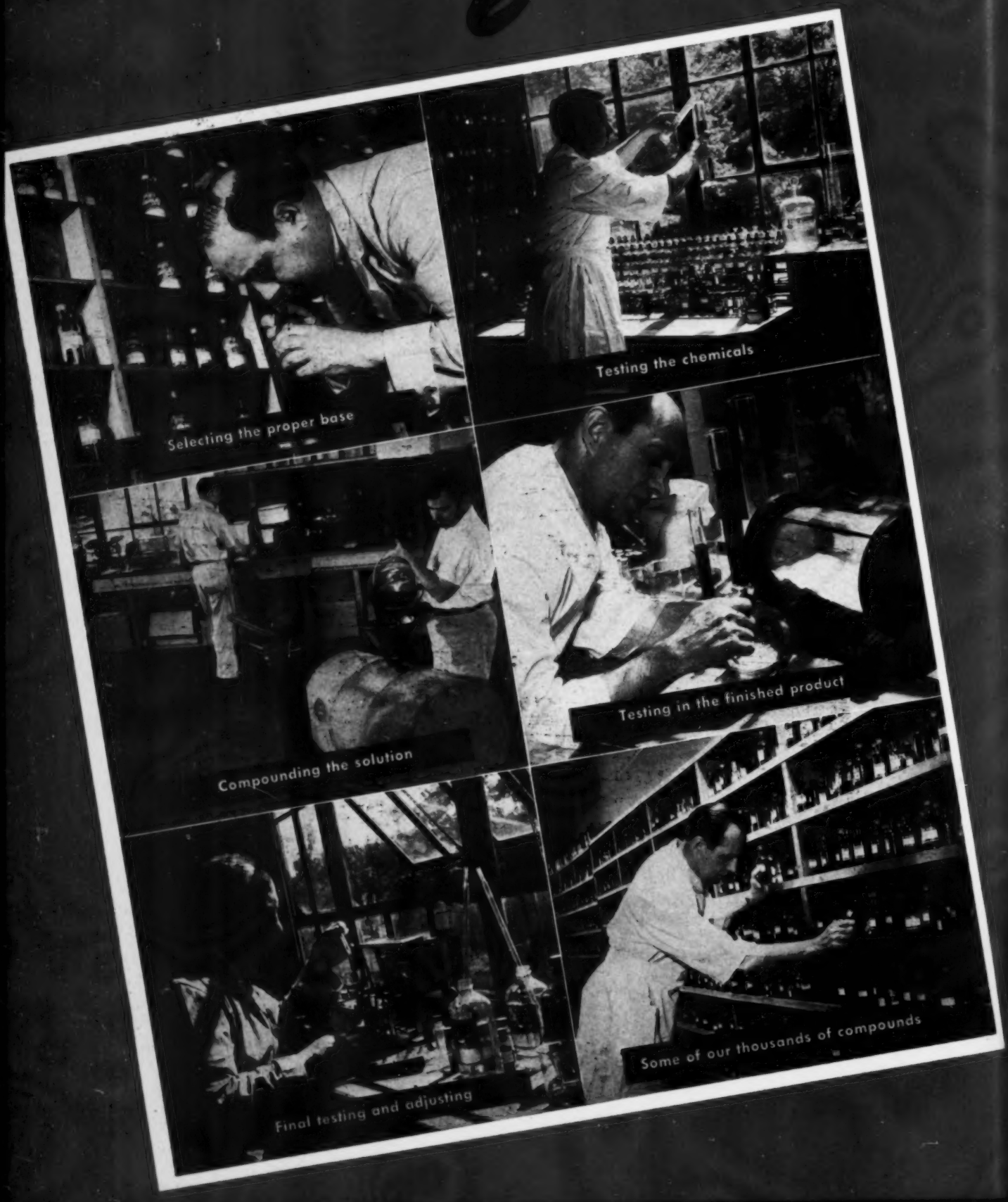
• HOUSEHOLD SPACE SPRAYS • LIVESTOCK & DAIRY SPRAYS
• INDUSTRIAL SPRAYS • ROACH SPRAYS • ROACH POWDERS • AEROSOLS

PYRENONE ADVANTAGES

• WIDE EFFECTIVENESS • FREEDOM FROM ODOR
• FREEDOM FROM IRRITATION • LACK OF TOXICOLOGICAL HAZARDS
• STABILITY • RESIDUAL KILLING POWER • COMPLETE CLARITY

Insecticide Division: 60 EAST 42ND ST., NEW YORK 17, N. Y.
General Offices: 180 VARICK ST., NEW YORK 14, N. Y.
Branches: BOSTON • CHICAGO • PHILADELPHIA • ST. LOUIS • LOS ANGELES
Plant and Laboratories: BAYONNE, NEW JERSEY
Canadian Agents: STANDARD CHEMICAL COMPANY LIMITED 195 FLEET STREET E. TORONTO, CAN.

At your


Selecting the proper base
Testing the chemicals
Compounding the solution
Testing in the finished product
Final testing and adjusting
Some of our thousands of compounds

Disposal—

Our Research Laboratories and Their Complete Facilities for Deodorizing and Reodorizing All of Your Products

Whatever type of product you manufacture, if it involves the use of a deodorant or re-odorant, we are confident that we have the compound you need—or we can develop it especially for you.

Merely send us a sample of your product. Our perfumer-chemists will analyse it—determine the proper odorizing compound and test this compound in your finished product to make sure that it meets all of your requirements.

This service is available to you at no charge.

Why not let us prove to you that we can provide the solution to your odorizing problems? Write today to—

Aromatic Products Inc.

15 East 30th Street, New York 16, N. Y.

ATLANTA — CHICAGO — DALLAS — MEMPHIS — PITTSBURGH — SAN FRANCISCO — LOS ANGELES

This is the title of an exciting new study made by Hospital Management into the purchasing procedures of hospitals as related to laundry equipment and supplies.

More than four hundred hospitals provided complete data on how and by whom these items are bought. Since the study indicates that more than three-quarters of the hospitals in this country operate their own power laundries, the tremendous market for soaps, starches, scouring powders, alkalies, and synthetic detergents is apparent.

The method of selling these supplies to hospitals presents a problem which this study can help you solve. We shall be happy to send you a copy of this newest market survey. Address your inquiry to

For Detailed Reference Data See THE MARKET DATA BOOK Business Publications Edition

Hospital Management

The Only Hospital Publication which is a member of both the ABC and ABP.

100 E. OHIO STREET, CHICAGO 11

FOR REAL SERVICE CALL PRENTISS

ON THESE BASIC INSECTICIDES!

1. Micro-Mesh Wettable (50% DDT Powder) containing a wetting agent and a dispersing agent and milled to an average particle size of 2.5 microns.
2. 25% Water-miscible DDT Concentrate, making an effective and economical residual spray.
3. Clarified Pyrethrum Concentrate No. 20—still the most economical basic raw material for contact sprays when performance is considered of primary importance.
4. Cube Powder, finely milled, uniformly batch-mixed and tested.
5. Both 25% and 30% Oil Soluble DDT Concentrates.
6. Micro-Mesh Powders especially designed for agricultural dusts or "high deposit" DDT agricultural sprays.

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110 William Street, New York 7, N. Y. 9 So. Clinton Street, Chicago 6, Ill.

Plants: Brooklyn, N. Y.—Newark, N. J.

PRENTISS FOR PEST-TESTED *Basic Insecticides*

General Chemical Research Presents

genetron 101

—second in its new series of ALIPHATIC ORGANIC FLUORINE COMPOUNDS

Out of General Chemical's extensive fluorine research program in the field of organic chemistry comes *Genetron 101* . . . the second in a series of important aliphatic organic fluorine compounds.

This chlorinated derivative of ethylidine fluoride has a lower melting point and lower vapor pressures than the parent compound. Many of its applications are already under investigation by far-sighted manufacturers who recognize the industrial potentialities of *Genetron 101:* as a refrigerant . . . an aerosol dispersant in admixture with other Genetrons . . . a selective solvent . . . a dielectric . . . and as an intermediate in the preparation of various other organic chemicals.

The physical data here may suggest uses for this low boiling organic liquid which also merit your prompt investigation. For experimental samples, write General Chemical Company, Fluorine Division, 40 Rector Street, New York 6, N. Y.

*Trade Mark, General Chemical Company

genetron* 101
PHYSICAL PROPERTIES

Formula	$CH_3 \cdot CCIF_2$
Molecular Weight	100.51
Color	Colorless
Melting Point	—130.8° C
Boiling Point	—9.2° C
Density	1.194 at —10° C
Latent heat of vaporization	96 B.t.u./lb.

Vapor pressure (p.s.i. abs.):

—30° C	6.0
—10° C	14.7
10° C	31.2
30° C	59.0

BASIC CHEMICALS
GENERAL CHEMICAL COMPANY
FOR AMERICAN INDUSTRY

GENERAL CHEMICAL COMPANY
40 RECTOR STREET, NEW YORK 6, N. Y.

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YES POWELL HAS 2,4-D!

IN FOUR POWCO FORMULATIONS

1 **Sodium Salt of 2,4-D**
(83.8% 2, 4-Dichloro-phenoxyacetic Acid)

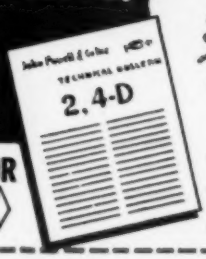
2 **Morpholine Salt of 2,4-D**
(Liquid Concentrate—Goes into solution in water)

3 **Methyl Ester of 2,4-D**
(Forms creamy, stable emulsion in water. Effective against wood shrubs and water hyacinth)

4 **N-Amyl Ester of 2,4-D**
(Forms creamy, stable emulsion in water. Effective against wood shrubs and water hyacinth)

Here are four Powco formulations of this revolutionary weed killer ready to go to work for you. Powell conducted a year's research before offering these products to manufacturers. It will pay you to investigate the possibilities of these Powco Brand 2, 4-D Concentrates.

JOHN POWELL & CO., INC.
BASIC MATERIALS FOR
INSECTICIDE MANUFACTURERS
ONE PARK AVE, NEW YORK 16, N.Y.



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One Park Ave., New York 16, N. Y.

☐ Please send samples of your 2,4-D formulations.
☐ Please send technical bulletin on your 2,4-D products.

Name ..... Position .....
Company .....
Address .....

Better Insecticides

McLAUGHLIN GORMLEY KING CO.

MAKERS OF INSECTICIDES

FOUNDED 1902

MINNEAPOLIS, MINNESOTA

FOR STEADY SALES

Put these two pictures together

When the retailer suggests not only *what* to use but *how* to use it, your product clears the last hurdle to steady repeat sales. When the sprayer or duster bought to apply your product is a HUDSON, you can be sure the application will be right.

Application will be less of a chore, because HUDSON Sprayers and Dusters are built for easiest possible operation. Your product will be applied correctly for greatest effectiveness, because HUDSON knows how to build sprayers and dusters for the perfect application of any insecticide, disinfectant, moth product or deodorant. As a result, your product has every chance to prove its worth. And you can be pretty sure that the user's next purchase will be the same dependable brand — the brand that did the best job.

Let a HUDSON representative suggest the right sprayer or duster to win repeat sales for your product. Write us today.

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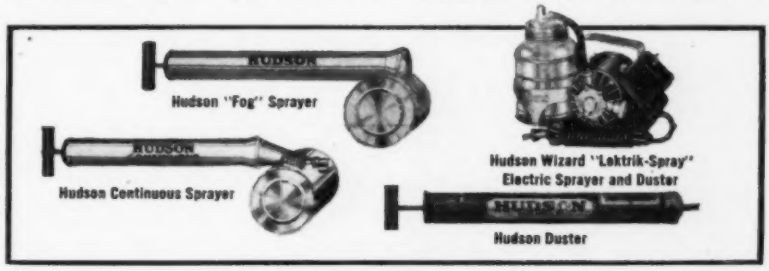
HUDSON

Tested and Proved
EQUIPMENT

H. D. HUDSON MANUFACTURING COMPANY
589 E. Illinois Street, Chicago 11, Illinois • *Branches in Principal Cities in the U. S.*



have you tried HEXAETHYL TETRAPHOSPHATE in your insecticidal formulations for aphid and mite control?

With Monsanto's introduction of hexaethyl tetraphosphate to the United States, agriculture has a powerful new weapon for the control of aphids, "red spider" and citrus mites — one that shows great promise against a number of other damaging insect pests in field test now being conducted.

Preliminary tests with hexaethyl tetraphosphate —"HETP"— indicate that it is most effective in emulsion form. Typical emulsions for spraying may be prepared by dissolving HETP in a suitable solvent together with an emulsifying agent. This solution is then added to water to form an emulsion having the proper concentration of HETP. Dilutions of 0.25% to less than 0.025% have been found effective against aphids, "red spider" and citrus mites.

For further information, write: MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1700 South Second St., St. Louis 4, Mo.

EMPIRICAL FORMULA

$C_{12}H_{30}O_{13}P_4$

TABLE OF PROPERTIES	
Appearance:	Tan to dark liquid.
Specific Gravity:	Approximately 1.3 to 10.7 lbs./gal.
Crystallizing Point:	Solidifies at approximately minus 40°C.
Boiling Point:	Decomposes above 150°C.
Solubilities:	Miscible in water, acetone, alcohol, benzene, carbon tetrachloride, chloroform, diacetone alcohol, ethyl acetate, glycerine, ortho-dichlorobenzene pine oil, toluene, xylene, alkyl naphthalenes, etc. Not miscible in kerosene or petroleum ether.
Stability:	Tests presently under way indicate that Hexaethyl Tetraphosphate as such is stable, but when diluted in water slowly hydrolyzes. Pending completion of these tests it is recommended that spray solutions be used within four hours after dilution.
Toxicity to Animals:	Preliminary tests on rats indicate that Hexaethyl Tetraphosphate is toxic to warm-blooded animals. Until further information is developed all due precaution should be observed in the application and handling of this chemical and its formulations to avoid skin contact or accidental ingestion.

MONSANTO CHEMICALS

SERVING INDUSTRY . . . WHICH SERVES MANKIND

"BUT WHAT'S YOUR LAST NAME?"

Our last name is *Koppers*. Many of you know our "children" by their "first names," but do you know their last name?

That is important to us, and it's important to you, too.

Many of you vouch for the extra service you get from Fast's Self-aligning Couplings or American Hammered Piston Rings, or White Tar insecticides or D-H-S-Bronze . . . and don't know that their last name is Koppers. If you know, you are probably disposed to put more than ordinary trust in other products made by Koppers.

Did you know that you can get a Koppers product for coating metal surfaces to prevent corrosion? A Koppers material that makes roofs last longer? Lumber that defies decay and termites? And many other products made with the same skill and originality and inventiveness as those?

So . . . look for this trade-mark which will soon be found on all Koppers products. Here it is.

K
KOPPERS

It is the mark of an organization which is engaged in many phases of engineering, construction, chemistry and coal carbonization . . . is in the forefront of new synthetic developments . . . is an important supplier to the pharmaceutical industry and to many other industries. For top value, look for this mark. Koppers Company, Inc., Koppers Building, Pittsburgh 19, Pennsylvania.

THE INDUSTRY THAT SERVES ALL INDUSTRY

For example . . .
for the chemical industries

As a coal tar distiller, Koppers provides large quantities of specialties such as tar acid oils, coal tar solvents, naphthalene, tar acids and tar bases, as well as industrial pitches, roofing and waterproofing pitches, pitch coke, bituminous coatings and creosote.

As a producer of coal tar chemicals, it is the source of large quantities of benzene, toluene, xylene, phenol, the cresols, the xylenols, cresylic acids, solvent naphtha, pyridine, the picolines, the lutidines, quinoline, isoquinoline, phthalic anhydride, ammonium thiocyanate, ammonium sulfate, Flotation Sulphur*, styrene monomer, divinyl benzene, polyethyl benzene, triethyl benzene, 1-vinyl cyclohexene-3, secondary butyl benzene, as well as smaller quantities of chemicals like alpha and beta methyl naphthalenes, acenaphthene, diphenylene oxide and fluorene.

*Registered Trade-mark

You'll get *customer good-will*

with ATTACLAY*

He's important—that customer! Potentially, he's millions strong—from bulk duster to householder. He's quick to sense values—to buy the product that does the best job, in the least time, at the lowest cost. And—he *wants* the advantages that Attaclay, as an insecticide carrier or diluent, can put into what you sell him.

For example, freedom from caking or lumping. With Attaclay, 50% DDT dust concentrates, and mixtures containing 30% by weight of oily liquid toxicants, remain dry and free-flowing. To the large-scale duster, this means not only trouble-free operation of the mechanical feed from hopper to nozzle, but also smooth flow from the nozzle. To the householder it means easier, freer dusting with any standard applicator. To both, more uniform coverage—time and money saved—inconveniences avoided.

Since a "light" dust can be expected to give greater coverage per pound, Attaclay holds promise of further economies. This is important in any application—household, garden, or huge acreage. It's doubly important to large-scale dusters, in terms of man- and machine-hours saved.

So, for you—the manufacturer—Attaclay may answer many problems. Its adsorptivity, uniformity and compatibility help *you* overcome processing headaches. But when it also helps you answer your *customer's* problems—that's "bonus" performance.

Write today. We're ready to help you—with a generous sample and technical aid.

ATTAPULGUS CLAY COMPANY

Dept. N, 260 South Broad St., Philadelphia 1, Pa.

**The second "shop" talk about Attaclay's features. This one concerns dust manufacturers—but in terms of advantages to their customers.*

Sweeping the Country!

Reports from all parts of the country acclaim ANTU as an effective control for the common brown rat. If you haven't tried ANTU yet, it will pay you to investigate.

ANTU was commercially pioneered by Du Pont. Compounders and pest control operators have found Du Pont ANTU powerful and versatile.

Du Pont ANTU is so toxic that usually 8 mg/kg is lethal. And it is readily acceptable to rats. This means it's easy to deliver a killing dose—and economical, because a little goes a long way.

Du Pont ANTU is effective as a tracking powder dusted into runways or pumped into burrows. Or it can be used with bait—mixed 1 to 3 parts with 100 parts of the bait you select.

Du Pont ANTU is ready for immediate shipment. Order a supply today—or use the coupon to secure full information.

E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., Wilmington 98, Delaware.

TO BE SURE YOU GET DU PONT QUALITY, BUY ANTU FROM DU PONT

ANTU *for better rat control*

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

DU PONT

REG. U.S. PAT. OFF.

E. I. du Pont de Nemours & Co. (Inc.) S-1
Grasselli Chemicals Dept.
Wilmington 98, Del.

Please send to my attention complete details on Du Pont ANTU. I am a ☐ Compounder
☐ Pest Control Operator

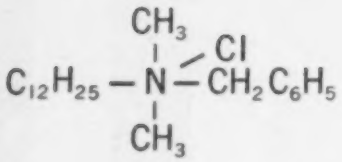
Mr._____

Company Name_____

Address_____

City_____ Zone_____ State_____

Use-Dilutions OF THE 10% SOLUTION OF ONYX CATIONIC GERMICIDE



Onyx Alkyl Dimethyl Benzyl Ammonium Chloride is shipped as a 50% concentrate which is water-diluted by the germicide manufacturer to a 10% solution, making a safe, exceptionally powerful bactericide and fungicide. The applications of various use-dilutions of this 10% solution are outlined in the panel to the right.

The 10% solution of Onyx Cationic Germicide has fast, dependable and relatively non-selective killing action as well as effective bacteriostatic properties. The solution is stable, colorless, odorless, non-sensitizing and non-irritating. It is non-toxic at recommended dilutions, and has no corrosive action on metals or other materials of construction.

Write on Your Letterhead for

- **Sample**
- **Toxicity Studies**
- **Technical Data Sheets**

12 Oz. per Gal. Control of fungi, molds and mildew. Surgical instrument sterilization (hot or cold)

5 Oz. per Gal. Storage of sterilized surgical instruments.

1¼ Oz. per Gal. Initial treatment for porous surfaces.

5/8 Oz. per Gal. Routine solution for floors and similar surfaces.

Inhibition of extreme putrefaction in garbage cans, cold storage rooms, etc.

Control of slime and decomposition odors in shower stalls, locker rooms, etc.

1/2 Oz. per Gal. Prevention of spread of contagion of athlete's foot by use in foot baths, shower stalls and locker rooms.

1/3 Oz. per Gal. Disinfection of bedpans, sputum cups, etc.

Sanitization and deodorizing of urinals, toilets, etc.

Disinfection of goggles, respirators, safety shoes, masks, etc.

Disinfection of animal cages.

Sanitization of interiors and terminal equipment of common carriers (busses, coaches, street cars, airplanes).

Sanitization of food storage bins.

Rinsing of food workers' hands.

Final security dip for surgeons' hands after soap and water scrub.

1/4 Oz. per Gal. Sanitization of milking machines, churns, milk cans and other utensils on dairy farms.

Disinfection of cows' udders.

General farm disinfection . . . coops, pens, barns, privies, etc.

Sanitization of all fluid milk plant equipment.

Bacteria and mold control for bread slicing machines and food choppers.

Disinfection of any food processing equipment.

Sanitization of cutlery, ice cream scoops, dishes, glasses, silver, steam tables, etc., in restaurants, bars, soda fountains, cafeterias, dining cars, etc.

General sanitization and deodorization of fixtures, equipment, lavatories, telephones, etc., in clubs, beauty parlors, barber shops, theaters, gymnasiums, hotels, etc.

1/16 Oz. per Gal. Sanitization by means of prolonged contact where organic matter is *not* present.

1/320 Oz. per Gal. Control of slime and algae in swimming pools, cooling equipment, etc.

Dilutions listed are in terms of ounces of the 10% solution in gallons of water.

onyx

INDUSTRIAL DIVISION

ONYX OIL & CHEMICAL COMPANY

JERSEY CITY 2, N. J.

CHICAGO • PROVIDENCE • CHARLOTTE • ATLANTA • LOS ANGELES

In Canada: ONYX OIL & CHEMICAL CO., LTD.—MONTREAL, TORONTO, ST. JOHNS, QUE.

★ STILL UNBEATABLE

Nature's Own Insecticide

KENYA PYRETHRUM

KNOCKDOWN... *Immediate*

The most important selling point in any insecticide.

STRENGTH... *Highest Known*

Ensuring economy in manufacture.

SAFETY... *Unchallenged*

Deadly to insects—harmless to man and beast.

ODOR... *Refreshing*

Clean, pleasant...suggesting the out-of-doors.

SUPPLY... *Guaranteed*

Present stocks adequate—substantial shipments in transit—crop conditions excellent.

•

KENYA PYRETHRUM

The SAFE Vegetable Insecticide

•

Inquiries should be addressed to

KENYA PYRETHRUM EXTENSION SERVICE, INC.

10 CEDAR STREET • NEW YORK 5, N. Y.

Official Test Insecticide . . .

THE 1946 Official Test Insecticide for evaluating insect sprays by the Peet-Grady Method is available at the office of this Association.

The 1946 O.T.I. became official on June 1, 1946 and will continue so through May 31, 1947. Stocks of 1945 and other prior year OTI should no longer be used for official testing by the Peet-Grady Method.

Supplies of 1946 O.T.I. are available at $5.00 per dozen six-ounce bottles to members of this Association. To others, there is a service charge of $1.00 per dozen bottles. Single bottles are $1.00 each. Orders should be sent to address below. Check must accompany order.

National Association of Insecticide & Disinfectant Manufacturers, Inc.

110 East 42nd Street **New York**

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LOWER IN COST!

PYREXCEL 20

A MORE POTENT SYNERGIZED PYRETHRUM CONCENTRATE

EXCELLENT KNOCKDOWN...HIGHER KILL

	KNOCKDOWN	KILL
Pyrexcel (finished insecticide)	98%	92%
Official Test Insecticide	99%	50%

Samples and quotations upon request

AN ACHIEVEMENT OF FIVE YEARS' INTENSIVE RESEARCH

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Raw materials to make PYREXCEL are plentiful. Our production facilities assure prompt shipment.

S. B. PENICK & COMPANY

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The old, familiar strictly-for-men perfumes are moving over to make room for the new blends, masculine in every respect, but more subtle, more unforgettable. The Dreyer Perfume Stylist will help you select your perfumes from a group of Spicy, Oriental, Floral, Cologne and specially blended essences.

for all men's products...

Shaving Soap • Shaving Creams • Talcums
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It's New! Powco Brand Antu — alpha naphthyl thiourea — a new, economical, effective rodenticide which is extremely acceptable to rats.

It's Deadly! Kills rats in 12 to 48 hours. A Specific for Brown Rat. Every batch biologically and chemically controlled for effectiveness.

It's Antu! Use it in standard bait formulas in as little as 1 to 3% concentrations. Use it as a contact poison—package it in dust guns or shaker top cans with talc or pyrophyllite.

It's Antu! The rat killer the world has been waiting for. It's ready for delivery in 5, 10, 25 and 100 lb. containers. Write, wire or phone for a generous sample and descriptive literature, today.

Send Today!

JOHN POWELL & CO., INC.
One Park Avenue, New York 16, N. Y.

☐ Please send sample of Powco Brand Antu.
☐ Please send descriptive literature.

Name..... Position.....

Company .....

Address .....

City..... State.....

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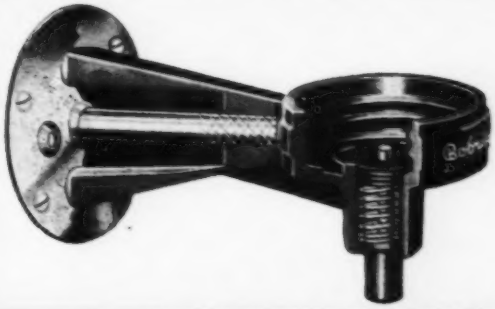

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SANITARY PRODUCTS

A SECTION OF SOAP

SAID N. J. Gothard, president of NAIDM in his address at the 33rd annual meeting of that association recently: " . . . the peaceful revolution which has been going on in the insecticide, disinfectant, and sanitary supplies industries is still one of our major concerns. War's aftermath is, I fear, going to be with us for a long time."

We will go even a step further than Mr. Gothard in saying that the aftermath of the war as far as insecticide and disinfectant developments are concerned will last even longer than "a long time." We believe that the revolution which has grown out of war-time developments has marked the beginning of almost a new disinfectant-insecticide industry. The old order of pre-war days is finished. The new order, we feel, is permanent, or as permanent as anything might be in the midst of revolutionary change which is still going on. New materials and new methods of use continue to open new markets for those who are sufficiently alert and progressive to keep the pace.

MISINFORMATION in the daily press is still a thorn in the side of the reputable insecticide manufacturer. Regularly and often, it seems, those with axes to grind and not too many scruples as to how they shall be ground, use the ignorance of newspaper reporters and editors in matters scientific as a means of getting their misinformation to the public. Recently in the *Philadelphia Record*, appeared a news item which was in fact chiefly ballyhoo for a branded roach powder. This item stated that "sodium fluoride and pyrethrum kill roaches, but they are poisonous and dangerous to use . . . DDT is effective but it takes two or three weeks for the roaches to die." Irrespective of the merits of the branded product recommended in the "news item," there can be little excuse to damn competing products unjustly. And to answer the charges by correspondence appears futile. By the time the answer appears, if it ever does, the readers have probably forgotten the original item and the chances of reputable manufacturers correcting the wrong impression are remote.

STILL once again, the effects of a coal strike threaten the manufacturer of a host of chemical products, among which disinfectants, insecticides, detergents, and allied specialties are a small part, but nevertheless highly important to their manufacturers and users. The complications involved in shutting down and resuming coking operations,—and all coal-tar chemical derivatives stem from by-products of coked coal,—make the duration of a coal strike of more or less secondary importance. The time required to bring coking operations from a standstill up to full production may involve a matter of months. This is probably the reason why the greatest pinch in supplies of coal-tar chemicals as a result of the coal strike earlier this year was felt a month or more after the strike had been terminated, after materials on hand had been used up and before they could be replenished. In fact, recovery from the previous strike was far from complete when this latest shut-down came. Backlogs of tar for distillation had not had a chance to be rebuilt,—and do not exist today.

We believe that manufacturers of disinfectants, insecticides and their basic materials may anticipate a pattern of developments similar to that which followed the former soft coal strike, —only more so and sooner. And that they may avoid being run out on a limb by their inability to supply the demand later, we feel that they should adjust their sales policies now. The pinch is already on and will grow worse.

N.A.I.D.M. Meets . . .

THE 33rd annual meeting of the National Association of Insecticide & Disinfectant Manufacturers was held at the Hotel Commodore, New York, December 2, 3 and 4, the first time in a number of years that the NAIDM meeting has been more than a two-day session. Group luncheons were held each day, and the annual banquet the evening of December 4. Association members gave a cocktail party on the evening of December 2nd.

N. J. Gothard of Sinclair Refining Co., East Chicago, Ind., was re-elected president of the association for another year at the closing session, with other officers also being re-elected, including Gordon Baird, Baird & McGuire, Inc., Holbrook, Mass., 1st vice-president, A. W. Morrison, Socony-Vacuum Oil Co., New York, 2nd vice-president, John Powell, John Powell & Co., New York, treasurer, and H. W. Hamilton, Koppers Co., White Tar Division, Kearny, N. J., secretary. Three members were elected to the board of directors, Preston Heller of B. Heller & Co., Chicago, Robert C. White, Jr., Robert C. White Co., Philadelphia, and L. J. Oppenheimer, West Disinfecting Co., L. I. City, N. Y. Heller and White had been members of the board several years ago before their departure for service in the Armed Forces.

Arrangements for the cocktail party were in charge of J. B. Magnus of Magnus, Mabee & Reynard Co., M. Lemmermeyer of Aromatic Products Co. and R. M. Stevenson, Givaudan-Delawanna, Inc. Clarence Weirich of C. B. Dolge Co., Westport, Conn., was in general charge of the meeting program, with Charles Opitz of John Opitz, Inc., Brooklyn, as chairman of the entertainment committee.

Several of the papers presented appear elsewhere in this issue. Others will appear in succeeding issues. The following paragraphs summarize a number of the subjects covered.

The President's Report

IN his annual report N. J. Gothard of Sinclair Refining Co., Chicago, NAIDM president, referred to the continuing rapid growth in association membership and the active interest which members take in and the support they give to association activities. He emphasized the fact that the association is a cooperative group, operating with a minimum number of paid employees, and depending largely on the voluntary contributions of members of time and work in conducting its affairs.

Referring specifically to the activities of the Legislative Committee, headed by William Zick of B. Heller & Sons, he noted that this committee is in close touch with officials of the Federal and State governments and with representatives of other associations in working out a sound revision of the Federal Insecticide Act of 1910 and the development of a model uniform state law which is being drawn up to eliminate the present lack of uniformity in regulations of the various states.

He referred to the great changes which have been taking place over recent months in the government, the abandonment of hampering controls which go with a government planned economy, and the apparent willingness to return to free enterprise, free competition and free markets. He expressed a hope that "business generally will prove itself able to return quickly to an atmosphere of normalcy without any runaway of prices which can only bring on inflation and an eventual bust."

The Secretary's Report

H. W. Hamilton of the White Tar Division of Koppers Co., secretary of the association, also reported at the first morning session, commenting on the steady and sound growth of the association. Among association activities he listed the following: "We have sponsored the Official Test Insecticide, fly breeding media, Peet-Grady Standard Method, Peptone control, model insecticide law, crawling insect lethal tests, standards for coal tar, pine oil, hypochlorite disinfectants and household insecticide in cooperation with National Bureau of Standards of the U. S. Dept. Commerce; cooperative advertising in trade papers, educational exhibits at scientific and educational conventions, chart of state laws, and many other projects.

"Committees are also working on new problems—aerosol standardization, cationic disinfectant testing, a new proposed state model law fostered by the Council of State Governments, floor wax standards, association policy regarding future activities and development, a compendium of state and federal laws, new methods required in testing insecticides containing DDT and gammexane, and many other matters of importance."

State Insecticide Bill

The Proposed Uniform State Insecticide and Fungicide Model Bill, which also includes herbicides and rodenticides was discussed by W. J.

Zick, B. Heller and Co., Chicago, chairman of the legislative committee. The bill has been prepared for the convenience of the states interested in protection and uniform marketing provisions. The bill will aid manufacturers, according to Mr. Zick, by eliminating the necessity of different label requirements in different states. The new model bill follows the federal act introduced last year but provides a more optional arrangement regarding what has to be placed on a label. Mr. Zick said that copies of the bill would soon be sent to all members of the association.

Aerosol Symposium

THE symposium of aerosols, conducted by John H. Mills, Bridgeport Brass Co., received the largest attendance of any of the presentations. "Insecticidal Aerosols" by Dr. E. R. McGovran and J. H. Fales, USDA Bureau Entomology and Plant Quarantine, Beltsville, Md., presented by Mr. Fales, was a review of the developments and progress in insecticidal aerosols since the war. Much work has been done to improve valve construction so that the rate of flow of an aerosol can be more accurately controlled. Mr. Fales said that there is a need for more study of several aspects of the aerosol dispensing problem. Spray pattern and drop size deserve more research, and information is needed on the properties of the nonvolatile constituents and also on formulae for low pressure dispensers. He stressed the fact that an aerosol will not enter an area of static air, and a method for moving air around a room is needed for best results. Included in a spray formula should be a material that will activate the insect and cause him to fly out into the spray. Mr. Fales said there is a need for a standardized test that will simulate conditions comparable to a large area of free-flying insects.

New Aerosols

The report on the "Expanding Field for Aerosols" by Dr. Waldemar Deitz, Bridgeport Brass Co., was presented by Mr. Shepherd. This paper, mentioning new types and uses of high and low pressure aerosol dispensers and listing the prerequisites for a good aerosol, is presented elsewhere in this issue.

Aerosol Questions

Answers to the questions on aerosols were supplied by Dr. Paul A. Neal, Chief, Industrial Hygiene Labatory U. S. Public Health Service Bethesda, Md.; Dr. Frank Hazard, Wilmington, Ohio; and H. E. Peterson, Research Department, Continental Can Co., Chicago. Ira Purdy, Westinghouse Electric Corp., Springfield, Mass., was unable to attend. The answers brought out a number of interesting facts: In regard to possible hazards in use of aerosols, it was answered that higher concentrations of solvent cause greater danger than does inclusion of DDT in the formula. A preparation of more than 3 per cent DDT in an oil solvent was stated to be dangerous in case of accidental discharge. No proven cases of DDT fatality are known, but there have been a number of cases of bad effects on the skin due to the solvents used. The USPHS has not approved any formula yet for killing bacteria by aerosols. The removal of aerosol residues is impracticable or even impossible. There is a microscopic method for measuring particle size. A delivery rate of 40 to 60 grams per minute is considered most desirable. Low pressure aerosols have a pressure of less than 25 lbs. per square inch at 70° F.

In discussing control by USDA, S. A. Rohwer of USDA stated that the Department does not have any way under the law of deciding which prospective licensees are competent but there have been cases where licenses have been held up. For purposes of correct labeling, solvents are generally considered as "active ingredients" which, in turn are defined as "materials that prevent, destroy, mitigate, and repel insects." Supplies of chemicals, gases, and dispensers will be very tight during 1947 although materials for low pressure aerosol may be easier to get. "Freon" can not be stock piled in large volumes so its supply will always depend upon conditions prevailing at the time.

Benzene Hexachloride

In a talk on the industrial outlook for benzene hexachloride, Dr. Alfred Weed, John Powell and Co., New York, stated that he doubted that there was a big enough place in the industry for the gamma isomer of the compound to warrant much more research and development being done to produce it. He pointed out that the biggest problem with the gamma isomer of benzene hexachloride is its odor, a strong musty odor which makes its almost impracticable as a household spray. Dr. Weed offered the information that certain of the isomers could be washed out of benzene hexachloride by treating 15 per cent by weight of it with a soluble base oil.

Although the name hexachloro cyclohexane is a more proper chemical name for the compound, Dr. Weed counted 36 votes to 31, among the group present, which favored using benzene hexachloride for the compound's commercial name. Dr. Weed presented some other interesting data in a comparison of the gamma isomer of benzene hexachloride with DDT and mentioned that it is a good contact poison for roaches. He passed out four sample packs of cigarettes for odor test, two of which had been treated with benzene hexachloride. Because of objectionable odor he expressed the opinion that benzene hexachloride is not suitable for use around

Over 500 hear discussions on aerosols, waxes, repellents, disinfectants, and other post-war sanitation materials at three-day New York meeting, Dec. 2-4

food products and that its future would be more promising in the agricultural field where it has been found particularly effective against wire worms.

Antu Discussion

A NUMBER of interesting points were brought out in a report on "Antu", by Dr. James C. Munch, Munch Laboratories, Upper Darby, Pa. Regarding the toxicity of "Antu" to rats, Dr. Munch stated that a rat will, on the average, eat 1% of his body weight in 15 minutes, and that one gram of bait will kill 5 pounds of rats, one pound killing a ton. It is estimated that there are about 140 million rats in the United States.

The concentration of "Antu" in most commercial rat baits runs from 0.75% to 5%, but a suitable range is from 2% to 3%. The toxic dose for Norway rats is about 7-35 mgs. per kilo; for white rats, about 15-35 mg.s per kilo, black rat, about 250 mg.s per kilo; brown rat, about 10 mg.s per kilo; and for mice about 60-80 mgs. per kilo. The toxic doses for a number of other animals were mentioned: chickens, about 2500-5000 mg.s per kilo; cats, 100 mg.s per kilo; puppies, about 75 mg.s per kilo; dogs 25 mg.s per kilo; and pigs, about 37 mg.s per kilo.

Dr. Munch stressed the fact that the susceptibility of test animals varies widely with many factors influencing it. It is important, he said, to kill rats at the first eating of "Antu" because it produces a tolerance in the rats if they eat a little less than the fatal dose. In three hours they will be able to survive with 5, 10, and even 30 times the lethal dose feeding for a month. He mentioned that it takes three times as much "Antu" to kill the male rat as it does to kill the female. However, it takes less to kill the male mouse.

Dr. Munch stated that "Antu" poisoning causes an increase in the lymph flow and an edematic condition in the lungs similar to that caused by phosgene poisoning. People with heart disease are not affected more than normally but those with kidney or liver disorders should be given special attention in cases of "Antu" poisoning. He stated that injection of iodides had protected animals, and that injection of dextrose and calcium gluconate is recommended. He also stated that no cases of industrial poisoning had as yet been reported but "Antu" labels should contain suitable warnings such as: wash the hands after using and don't inhale. Send for a Doctor or Veterinarian. Wash out stomach and give a non-oil laxative.

Toxaphene Discussed

In a paper presenting "Results With a Chlorinated Bi-Cyclic Terpene (3956) Against Certain Household Insects," by L. A. Stearns, W. Leroy Parker, and J. H. Beacher, University of Delaware, information was given on the synthetic "3956" developed by Hercules Powder Co., and the Univ. of Delaware entomologists. Although referred to as a polychloro bi-cyclic terpene of empirical formula $C_{10}H_{16}Cl_{2}$, the material is more properly identified as a chlorinated camphene. It is light yellow, waxy, with a mild, piney odor and contains 67-69 per cent chlorine. Its excellent solubility in common organic solvents makes for ease in formulation of liquid concentrates.

A number of slides were shown summarizing results of "3956" against several household insects and indicating that its efficiency is comparable with that of DDT. "3956" was superior to DDT in concentrations under 5 per cent when tested against the German roach. The compound appears to offer satisfactory control of carpet beetles, and the webbing clothes moth, but dry-cleaning fluids lower its effectiveness because of solvent extraction. It was mentioned also that "3956" was found to be as effective as aerosol grade DDT for control of bedbugs. In general, the product exhibited a high kill at low concentrations and displayed a marked residual effect. The poor knockdown property of this insecticide, and of DDT as well, can be improved adequately, according to the paper, by several chemicals, including "Thanite" (isobornyl thiocyanoacetate). Normal storage conditions have no appreciable effect upon the toxicity of "3956." The paper will be presented in full in an early issue.

Insect Repellents

Apologies were offered to Dr. Michel Pijoan, (USNR) University of Colorado, Boulder, Colorado, who had to compress his paper, "Insect Repellents," into an explanation of a number of slides of data and curves. He said that the increase of radiated body heat decreases repellency time, and reported a number of cases of synergism. Stating that, although the "diols" and "NMRI 448" are among the best repellents, no satisfactory one for all insects has yet been found, Dr. Pijoan concluded by recommending that the work be continued at the Orlando Laboratories of USDA.

N.A.I.D.M. Exhibit

Speaking briefly about the "N.A.I.D.M. Exhibit," A. W. Morrison, Socony-Vacuum Oil Co., New York, chairman of the exhibit committee stated the results of exhibits so far this year have been very encouraging. It was found impossible to bring the exhibit from Cleveland to the New York meeting because of the embargo on freight transportation.

Testing Quaternaries

In discussing "Some Post-war Problems in Testing Disinfectants," Dr. L. S. Stuart, Senior Bacteriologist of USDA Production and Marketing Administration, Beltsville, Md., stated that the release of many new disinfectants at the conclusion of the war brought on a number of new problems. The new compounds test very high but sometimes a number of fallacies and inconsistencies turn up. For example, he stated that phenol coefficient tests do not give a fair value in cases where quaternary ammonium compounds are used in part in proprietary products to boost the phenol coefficient value.

Another problem, according to Dr. Stuart, is the difficulty in evaluating differences in samples of a particular quaternary ammonium compound manufactured at different places. He finds pH-dilution curves to differ, depending probably on varying degrees of hydrolysis, and to show variations in shift with time. No stabilization equilibrium is present at a uniform level. Preparation of test solutions and cultures needs more standardization, and the method of calculation of results needs review. The present method is based on a straight line relation be-

tween germicidal strength and chemical composition but he claims the relation is probably exponential and needs a constant corrective factor derived by experimental means. He also questions the usefulness of a 1-2 minute kill value because the time curve is asymptotic in that region and the data has more meaning after several minutes. In summing up, Dr. Stuart, concluded that we should be satisfied with nothing less than a method that will protect all and provide for decent fair trade practice.

Jack C. Varley, Baird and McGuire, Inc., St. Louis, brought to the attention of the conference the fact that a new project involving some 15 laboratories has been started to develop a new stream-lined test for determining the germicidal value of quarternary ammonium compounds, and that results are expected in a matter of a few months. He said that surgical use problems are being by-passed.

Dr. Arthur R. Cade, Givaudan-Delawanna, Inc., New Jersey, reporting on "What a Quantitative Study of the F.D.A. Phenol Coefficient Test Procedure Shows", emphasized the fact that the phenol coefficient method is fundamentally practical but must be interpreted within the limits of its definition. The phenol coefficient is, after all, a mathematically derived ratio value set up under conditions of complete kill and it is not strictly applicable when it is applied to a sanitizing agent which is only supposed to cause a kill great enough to do the particular job at hand. He further stated that the F.D.A. method's inability to render 100% kill and to show the true situation in the medication tube introduces misinterpretations of the results. He stated that the "Use-Dilution" method and the "Speed of Reaction Technique" method are actually modifications of the "Phenol Coefficient" method and their value lies in complementing the latter method. In cases of high-powered synthetic phenols and quaternary ammonium compounds, Dr. Cade believes the coefficient method to be applicable if certain modifications are made in order to improve accuracy.

Dr. Cade offered data from charts to explain and substantiate his views, and made a number of suggestions such as the use of plate counts to supplement the test. He also suggested the use of a larger loop or a medical swab which could pick up more easily organisms suspended on the sides of the tube.

With these modifications, the method would be as good, he felt, as are the filter paper or glass tube techniques which he considers to be modifications of the phenol coefficient method.

The paper on "Organic Mercurials as Industrial Disinfectants" by J. P. O'Brien, F. W. Berk Co., New York, is presented in full in another part of this issue.

Food Sanitation Discussed

Dr. Israel Weinstein, New York City Commissioner of Health, addressed the assembly on the subject of "Restaurant and Food Production Sanitation" and stressed the fact that the public needs better and more definite education regarding proper use of insecticides and that the Health Department is anxious to cooperate with the Association in making this possible. He mentioned that a higher standard of performance is being contemplated for exterminators and that there is a need for proper education regarding methods of dispensing insecticides. He pointed out that misleading advertisements and publicity often oversimplify the problem to the public and as a result extermination in untrained hands is too often inefficient. He felt that the NAIDM is too often hesitant to take necessary steps, appearing to wait for additional study or research on particular problems before acting. He urged that problems be faced without delay and suggested that the Association set up some type of service to the consumers to aid them in the proper methods of using insecticides.

National Sanitary Foundation

In a report on the "Organization, Purpose and Activities of the National Sanitation Foundation," by Walter F. Snyder, executive director, the need was expressed for a uniform approach to the public on all matters of public health sanitation, particularly in the food industry. Mr. Snyder said that there was still a need for more factual data rather than opinion. He stated that the purpose of the National Sanitary Foundation was "the educational scientific and charitable purposes of promoting progress and betterment in environmental sanitation, health and education of and for mankind." With adequate financing, the organization may be expected to bring answers to industry in the near future to problems in sanitation that might otherwise not be forthcoming for 30 or 40 years. Furthermore, effective educational material in the field of sanitation could be produced and its influence in the field felt much more quickly. In the efforts toward standardization of rules and regulations existing in different localities, the Foundation expects to be of considerable benefit to the industry as well as the public health officials and the general public. The approach of the Foundation is to eliminate confusion mainly by bringing together the leaders in the field of sanitation so that they can solve common problems. Financial and technical assistance is provided to organizations and individuals to increase scientific knowledge and develop and improve the means of education. As the method is applied and expanded, the Foundation expects to serve, more and more, as an integrating institution and clearing house for information.

Through the organization of an industrial advisory committee, the research and educational committees maintain a close contact with the problems of more adequate sanitary facilities. The foundation has created a consulting committee on sanitation which will provide technical guidance in the development of uniform standards of sanitation based upon scientific research.

Food Sanitation in Canada

Speaking on the problem of "Sanitary Control in Food Establishments in Canada," A. G. Macnab, Sanitary Engineer, City of Westmount, Montreal, Canada, said that one of the most important factors to control in

(*Turn to Page* 167)

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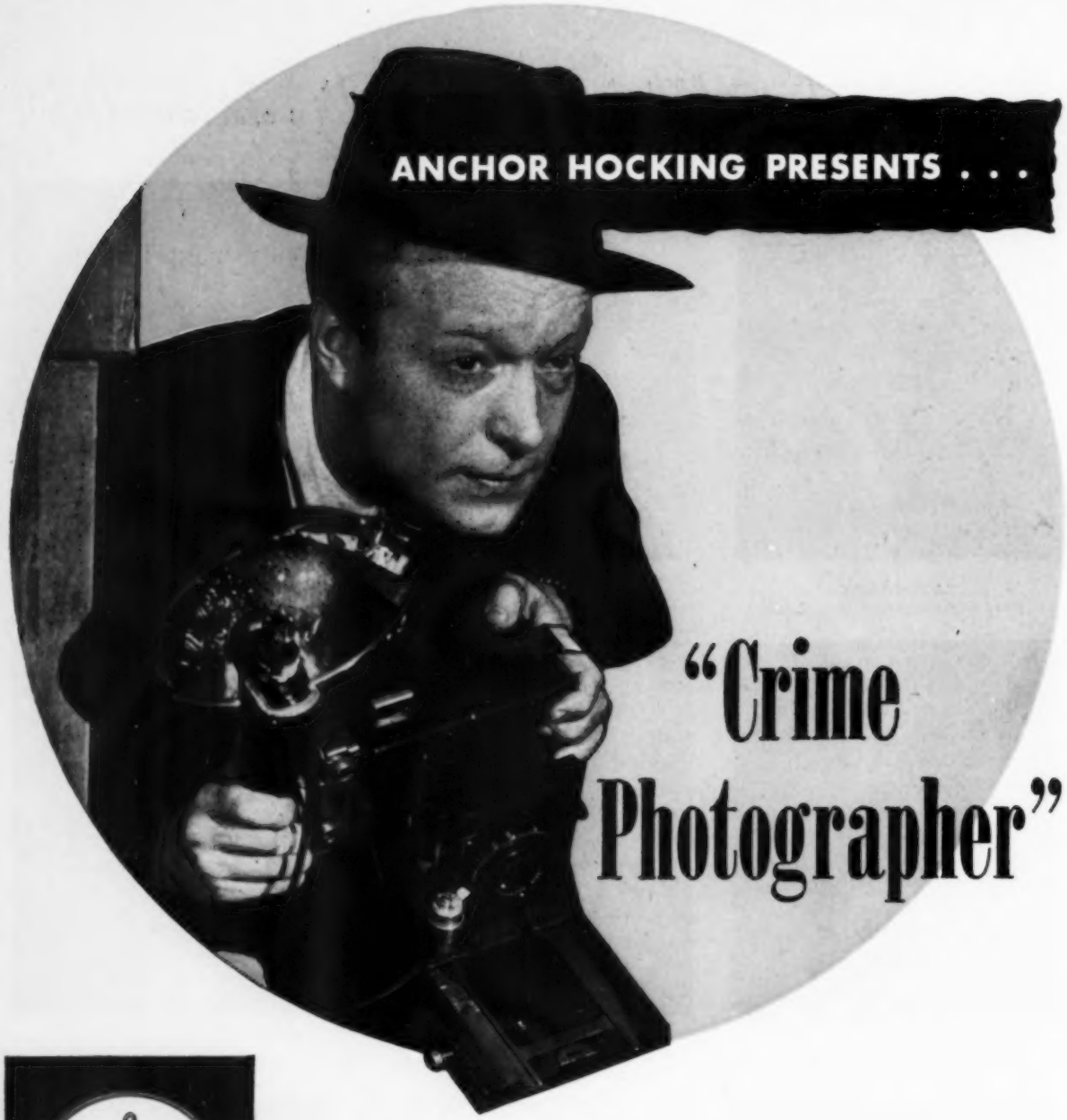

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The Expanding Field for AEROSOLS

By Dr. Waldemar Dietz & H. R. Shepherd*

Bridgeport Brass Co.

IN ANY discussion of aerosols one must almost immediately define his terms lest he become the victim of this seemingly innocent and all inclusive term which the layman is rapidly accepting as common place. Although a more specific definition for aerosols is yet to be agreed upon, the following would do for all practical purposes for the present time. *A colloidal system consisting of very finely subdivided liquid or solid particles dispersed in and surrounded by a gas.* Aerosols in their generic sense are not new, as we well know. Gibbs (1925) in his monograph dealing with dispersed systems in gases gives a comprehensive survey of the properties of aerosols and their practical implications. Another work of considerable significance was that put forth by Whytlaw-Gray and Patterson (1932) in their treatise on "Smoke".

In keeping with the clarification of terminology we might go one step further and attempt a classification based on methods of producing Aerosols. Briefly, there are three types, thermal aerosols, mechanical aerosols and dynamic or liquefied gas aerosols. It is the liquefied gas or "packaged power" type that we are primarily concerned with for it is this type that has found over 12,000,000 civilian users in the past year.

With the end of the first year of commercial production and acceptance of the liquefied gas aerosols, we readily come to the conclusion that the hopes, aspirations, planning and development carried on by government agencies and industry during the war years were not in vain. Of all the developments to come out of the past conflict, none has been so widely distributed to and accepted by the public as has the aerosol dispenser. Due to the extensive amount of research and development carried on by various war created agencies in cooperation with industry, it was possible to present to the public a product which had passed the most rigid of tests. A product commercially acceptable was developed to permit its almost overnight conversion from military to civilian use. The ultimate presentation of this new and efficient method of dispersion can be attributed to the excellent team work and close coordination of effort between government research workers and industry. The advances made in aerosol dispersion are predicated on the ability of the insecticide industry to utilize the results of fundamental research in colloidal chemistry. To date the industry has not been able to take complete advantage of the work done under the sponsorship of OSRD. The results are voluminous and the process of military declassification is a time taking and tedious process, but the year 1947 should see a large portion of this material made available.

In putting out an aerosol product the insecticide industry is faced with a unique task in that we are not concerned alone with the effectiveness of the substance to be dispersed. One of our prime concerns is imparting to the toxic materials certain physical properties which increase both their chemical and physical activity, in this way rendering them more effective per unit of weight and effort. In accomplishing this task we must translate fundamental principles of physical chemistry into sound commercial engineering practices. To carry forward the progress already made will call for the continued mutual interest currently existing between our industry and government technical facilities.

The future of the aerosol industry without doubt will be one of expansion, not only in the number of new organizations entering this field, but expansion within existing organizations. Just how this expansion will manifest itself in the future is of prime importance to the industry. As seen at present, the diversification of aerosols resolves itself around the following general outline:

I. Containers
   - A. Sizes—Development of variety of sizes in an endeavor to meet the requirements of different markets.
   - B. Valves—A development of a variety of valves and spray heads in order to meet the requirements of space and surface applications.

II. Propellants
   1. High Pressure
      - a. Dichlorodifluromethane (CCl_2F_2)
      - b. Mixtures of dichlorodifluromethane (CCl_2F_2) and butane and propane.
      - c. Mixtures of dichlorodifluromethane (CCl_2F_2) and a new aliphatic organic fluorine compound (CH_3CHF_2)
   2. Low Pressure
      - a. Mixtures of trichloromonofluromethane (CCl_3F) and dichlorodifluromethane (CCl_2F_2)
      - b. New low pressure propellants not yet available.

III. Formulation
   - A. Modification due to new and more effective toxicants and solvents.
   - B. "Tailor Made" insecticide formulations for specific uses and applications.

IV. New Applications
   - A. Germicidal aerosols—space surface sterilization.
   - B. Pharmaceutical aerosols—for the treatment of respiratory troubles via oral application.

* Before 33rd annual meeting Natl. Assn. Insecticide & Disinfectant Mfrs., New York, Dec. 4, 1946.

C. Cosmetic aerosols—skin surface applications.
D. Agricultural aerosols — greenhouse and garden aerosols.
   1. Growth regulators
   2. Fungicidal aerosols
E. Deodorants—general household space deodorant.

A COMBINATION of factors will determine the size and variety of containers. Market surveys show that there is a group of consumers who are hesitant to purchase the 15-ounce unit and would like to convince themselves of the aerosol method by the initial purchase of a smaller unit. Such a unit in the 3½ ounce package will shortly be available, which on a repeat sale we believe would result in a purchase of a larger size. Due to increased effectiveness, ease of operation, low labor costs and general handiness of the aerosol method, we find that aerosols have been received with unprecedented favor in both the industrial and institutional field. With this in mind the future should bring to the market a number of larger units of 2½ pound, five pound and ten pound size.

Another factor which points to future variation in containers is the introduction of low pressure aerosols as a co-product of the existing high pressure unit. A low pressure unit is more than a certainty but let us not be deluded by our enthusiasm for an expanding market. The low pressure unit has its many peculiar problems which though not insoluble, must be given careful thought and be dealt with in utmost detail so that a worthy product be presented to a consuming public already sympathetic to the aerosol method of dispersion. Conversion from high to low pressure is not only a question of container and propellant, as those who are engaged in research and development of such a unit know. It is rather a combination of many factors such as formulation, valve design and propellant which when used in proper combination will give the desired aerosol fog or mist.

With a limited tonnage of propellants now available we will witness many attempts to utilize other low boiling point liquids in order to extend the existing supply. This will not only be attempted by the use of mixtures suggested by Goodhue, Fales and McGovran (1945) of hydrocarbon derivative gases such as butane and propane, but through the utilization of other new propellants such as may be devised from the polyhalogen derivatives of methane and ethane. Those anticipating entry into the low pressure field are actively engaged in exploring the possibilities of mixtures of trichloromonofluromethane (CCl_3F) and dichlorodifluromethane (CCl_2F_2) as well as Genetron 102B.

The progress made in formulation by the insecticidal aerosol manufacturer parallels to a great extent the development of new toxicants in the general insecticide field. The concentrated effort put forth during the war years toward this end led to the perfection of new and more effective insecticides which are less costly. The progressive aerosol fabricator must take cognizance of these new materials, for the future will see many departures from the conventional pyrethrum-DDT combinations. One substance which Slade (1945) has shown to have great promise is hexachlorocyclohexane, particularly the gamma isomer (gammexane). Another material with lower toxicity to higher animals and effective insecticidal properties is the methoxy analog of DDT (Dimethoxy diphenyl-trichlorethane). Another compound meeting with favor is 1068, a chlorinated hydrocarbon introduced by Kearns, Ingle and Metcalf (1945).

The many attempts to extend and activate pyrethrum due to high cost and scarcity have met with considerable success. Among those materials showing synergistic properties as well as insecticidal effectiveness are such active components as piperonyl-butoxide, piperonyl cyclohexenane and iso-safrole. Some of these materials have already been accepted for commercial aerosol production for the coming year.

Considerable thought will be given in the future to the manufacture of so-called "tailor made" aerosols for industrial and institutional uses as well as a limited consumer market. These products may have variations of standard formulations which will meet the unique needs of a particular market. A noteworthy example among these is a formulation for the fur industry which will, along with its quick acting insecticidal properties, also disperse an effective residual moth-proofing agent. Another is the production of an aerosol specifically devised for use by the greenhouse and florist trade.

WITH a good year of very informative commercial experience behind us, the aerosol industry may now take bold steps in many new directions. It was the insecticidal aerosol which served as a proving ground for many new applications of liquefied gas aerosol and numerous applications are being carried forward. Much work is being conducted on germicidal aerosols, pharmaceutical aerosols, cosmetic aerosols and a wide variety of agricultural aerosols, especially as represented by the relatively new work on fungicidal aerosols done by Clayton (1946) using a benzyl salicylate aerosol to control blue-mold disease.

Outstanding work has been carried on by Floyd F. Smith and his associates (1945) on a practical application of insecticidal aerosols in the agricultural field. Another new application that may enter the commercial picture is the use of plant growth regulators propelled by the aerosol method, the original work having been done by Hamner and Schomer (1944). These will soon be put into commercial production on large scale. In the development of these new products one should always keep in mind the universality of this method of dispersion. Extreme precaution should be taken to fulfill certain basic requirements, lest a product get to the market which would reflect adversely toward the whole aerosol industry. These general prerequisites might be listed briefly:

1. Minimum toxicity to higher animals, especially man.
2. Non irritating to eyes and respiratory organs.
3. Rapidly effective for whatever purpose intended.
4. Agreeable odor.
5. Minimum color.
6. Non inflammable.
7. Non-corrosive.
8. Reasonably persistent.

These requirements may each present many peculiar problems but there is

little doubt as to the continued ingenuity and resourcefulness of the aerosol industry to solve them.

Any business organization in a quick attempt to scoop the aerosol field by the introduction of any new product will of necessity have to assure a product of exceptionally high quality, as any such product will be very thoroughly scrutinized by both the public and regulatory officials. We are still in a pioneering activity, and with new attempts come increased responsibility. The future expansion of the aerosol industry depends on continued conscientious effort being put forth by members of the industry in close cooperation with government research and regulatory agencies. Through such careful procedure the public will be given opportunity to take advantage of new and improved aerosol products.

The insecticide industry has served as a springboard for the realization of the importance of physical make up of dispersed systems and its practical applications. The result is a sort of "chain reaction" with most every field being awakened to this vital line of thought. In this respect we of the insecticide field might well be proud when we realize the implications of such a stimulus. It is our hope that our industry will continue to be a source of such constructive efforts.

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Insecticidal Aerosols

Developments in the civilian marketing of aerosol insecticides are reviewed by Lyle D. Goodhue, Aerosols, Inc., Neodesha, Kan., in an article "Aerosols and Their Application" in the August, 1946, issue of the *Journal of Economic Entomology*. Aerosol bombs have been improved mechanically, and the formulas have been adapted for household use, Mr. Goodhue points out, and more than seven million have already been taken by civilian buyers. The principal objection of critics, that aerosol insecticides are uneconomical, is contradicted by Mr. Goodhue, who points out that considering the proportionately higher insecticidal content, aerosol insecticides are competitive in price with other types of insecticides. In addition, says Mr. Goodhue, an aerosol insecticide is more likely to be applied correctly, and offers the additional advantages of cleanliness and convenience.

"A great deal of effort," notes Mr. Goodhue, "is being exerted by manufacturers to reduce the cost of the aerosol bomb. One approach to this end is the use of a low pressure propellent which can be used in a light metal container. This will reduce the price of the container but the cost of the contents is not easy to reduce without lowering quality. A regulation by the Interstate Commerce Commission states that in order to use a so-called 'tin can' of more than 4 fluid ounces capacity, the pressure must not exceed 25 pounds per square inch at 70° F. Sufficient biological tests on an aerosol produced by this low pressure have not been made to determine its practical value. Higher pressures are permissible in containers with a capacity of less than 4 fluid ounces, making effective aerosols in cheap containers a distinct possibility. Without a doubt large numbers of 'tin can' aerosol dispensers will be on the market next year. Only a shortage of tin and terne plate prevents their production now. Attempts to reduce the formula costs will result in the use of less or cheaper insecticides. Unless some control is exercised, the 'tin can' aerosol business may degenerate to a point comparable to that existing with fly sprays before the war.

"Another approach to a cheaper aerosol bomb is to employ a compressed gas as the propellent. It may be possible to use carbon dioxide at about 250 pounds pressure in the more expensive containers. Here a saving in the contents instead of the container would reduce the total cost. Such aerosols are inflammable and are therefore not acceptable at this time. Nevertheless, one company is attempting to market a soda siphon cartridge using a solution of carbon dioxide in acetone as the propellent."

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Insect Repellents

Repellent compositions of jelly-like consistency having prolonged effectiveness contain two kinds of ingredients: two or more partially immiscible cellulose derivatives to provide the jelly-like consistency, and one or more repellent compounds. A third type of ingredient may be present, selected from the group consisting of propylene glycol mono- or di-stearate and glyceryl distearate, whose purpose is to render the composition more easily removable by washing with soap and water. The cellulose derivaties mentioned include ethyl cellulose, benzyl cellulose, cellulose nitrate, acetate, acetobutyrate, and acetopropioate. These may be present in concentrations of 1-10 per cent. The repellent compounds are dimethyl phthalate, 2-ethyl-1,3-hexanediol (Rutgers 612), and Indalone. A. Dreyling, to E. I. du Pont de Nemours & Co. U. S. Patent No. 2,403,498.

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Sabadilla Use

In Peru a factory has been set up to manufacture an insecticide called "Babbini," composed of sabadilla, chile pepper, arsenic, and quicklime. In 1945 in Trinidad a commercial preparation of sabadilla was found effective in protecting sugar cane against the froghopper. *Chem. Trade J. & Chem. Engineer 119*, 310-12 (1946).

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Organic Mercurials as DISINFECTANTS

By John P. O'Brien*
F. W. Berk & Co.

THE use of organic mercurials of the phenyl mercury series as disinfectants is relatively new. A representative compound, phenyl mercuric nitrate, was first prepared by Robert Otto in 1870[1], but the next record of any investigation on these compounds seems to have been made by L. A. Weed in his thesis at Iowa State College in 1927 and 1928[2]. The investigations of Weed were continued in association with Dr. Ecker at the Institute of Pathology, Western Reserve Medical School in Cleveland[3]. Methods of the preparation of the salts were perfected, the compounds were found to be strongly bactericidal and fungicidal, and indications of their possible clinical usefulness were obtained.

Biskind[4] reported on the clinical use of phenyl mercuric nitrate in gynecology, finding favorable response to its use invariable in all the cases tested and that rapid amelioration of conditions was evidenced as well.

Birkhaug[5] tested the adaptability of phenyl mercuric nitrate as a disinfectant when used in certain parts of the body, and found it possessed, both in vitro and vivo, unusual bacteriostatic and bactericidal action, far in excess of commonly used antiseptics and disinfectants, combined with a low toxicity, and inability to precipitate serum or tissue proteins. Armangue and Maestrea[6] studied the characteristics of various phenyl mercuric salts, compared them with other chemical agents in current use, and classified the action of phenyl mercuric salts of different acids as to the valuation of inhibitory power and the investigation of phenol coefficients. They found the acid radical influenced the solubility, taste, color, and other physical characteristics, and concluded from their tests that phenyl mercuric borate was best for clinical use.

Doherty[7] found that of the substances tested, which consisted of most of the common disinfectants in use at the time, phenyl mercuric acetate showed the greatest disinfecting power on skins and hides infected with anthrax spores. Anthrax, a disease of animals, transmissible to man, is an infectious and contagious disease caused by the bacillus anthracis, a spore forming organism possessing great viability under the most adverse circumstances. The spores are very resistant to disinfection by many compounds. Skins and hides from animals having anthrax constitute a serious source of anthrax infection for the workmen handling them and the spores which are washed off during the wet process of tanning may become a source of infection for other animals if the effluent comes in contact with pastures and fields. There is evidence that such contamination of streams and fields may constitute a source of infection for many years.

Levine[8] reported his results in 205 cases of fungus and yeast infections of the skin. He concluded that phenyl mercuric nitrate was efficacious in the treatment of these conditions, producing cures where other forms of treatment had failed.

Greaves[9] used phenyl mercuric nitrate in the treatment of otitis externa and fungus diseases of the skin among naval personnel. He found that in 75 cases of otitis externa pain and discomfort in the acute cases was eliminated and recovery was hastened in the chronic and long standing cases. In 100 cases of fungus diseases it was very efficient in rapidly and effectively eliminating fungi from the lesions, and in both of the disease types mentioned there were no ill or irritating effects accompanying its use.

O'Flaherty[10] found that phenyl mercuric acetate prevented growth in extremely low concentrations on some molds and that it and its related compounds offer much promise as disinfectants for germ-proofing leather.

Investigations have shown that in general, the phenyl mercuric salts possess bactericidal and germicidal properties of about the same order[11], and indications are that the phenyl mercuric radical is the active part of the compound. The acid radical portion, to a large extent, determines the characteristics such as solubilities, color, taste, etc. There are some indications, however, that the phenyl mercuric ion and materials such as borax are synergistic. Of considerable importance also is the report that phenyl mercuric salts are strongly potentiated by wetting agents of the aerosol type[12].

In industry phenyl mercury compounds find application in many and varied fields. Most adhesives are subject to decomposition due to the fact that they consist of animal or vegetable compounds and thus provide a suitable field for the growth of microorganisms. This deterioration results in a decrease of the adhesive qualities and the development of objectionable odors and colors. Phenyl mercuric compounds offer advantages as pre-

*Before Natl. Assn. Insecticide & Disinfectant Mfrs., New York, December 3, 1946.

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servatives for adhesives in that they are odorless, do not leave objectionable residues, do not change the properties of adhesives and effectively prevent spoilage at extremely low concentrations. Results of both laboratory tests and plant use indicate that concentrations of from 0.0002 per cent to 0.01 per cent will give excellent preservation of adhesives, on the basis of adhesives ready for application rather than dry basis. For the preservation of starch and dextrin type adhesives, a dry mixture of 2 per cent phenyl mercuric acetate in bentonite clay has proved to be best fitted. The dosage required to give protection against molding and souring will depend to a large extent on the nature of the material making up the paste, storage temperature and storage time. Consequently the concentrations given above are to be used as indications only and the required amounts to be used will have to be determined by the manufacturing conditions.

FOR the preservation of casein or protein type paints concentration of from 0.004 per cent to 0.01 per cent based on the weight of the finished product is recommended. Again the effective concentrations should be found through conditions of use and will depend upon variables in the raw materials and the degrees of exposure of the finished product. In oil paints phenyl mercuric compounds are approved as toxic ingredients for certain wood sealers. 0.2 per cent phenyl mercuric oleate or 0.12 per cent phenyl mercuric acetate is recommended for use in Class 638 Sealer (Holabird Ordnance Department [13]). Phenyl mercuric acetate is used for preservation of oil paints either by incorporation in the paint or in the form of additives which may be mixed with the paint at the discretion of the user at the time of application. When used as an antifouling paint, phenyl mercuric compounds have proved superior to other common preservatives, however, test results so far have indicated that the concentrations required would not be economically feasible and work is in progress to determine if the concentration of phenyl mercuric compounds can be reduced sufficiently, while still giving adequate protection, to bring the cost of the finished paint down to competitive levels.

In the pulp and paper industry phenyl mercuric acetate gives excellent control of slime in various parts of the process. 2 per cent of phenyl mercuric acetate mixed in bentonite clay as an extender, marketed under the name of "Mersolite P," can be handled easily and disperses readily in water. Control of slime is obtained by the addition of from one to four ounces of such a dilute mixture per ton of pulp in the system. Phenyl mercuric acetate, either in concentrated or dilute form, may be added directly to the beater or at any other convenient point in the system. This addition can be made by packing phenyl mercuric acetate in paper envelopes which may be introduced merely by throwing paper envelope and contents into the system where desired. When used in effective concentrations, negligible corrosion has been encountered, the material is easily dissolved and handled, requires no expensive apparatus for satisfactory application, and is safe.

In the mildew proofing of textiles phenyl mercuric compounds have been used with great success. Concentrations ranging from 0.01 per cent to 0.05 per cent have been used and certain governmental agencies have appoved phenyl mercuric acetate at 0.1 per cent for use as a mildew proofing agent on fabrics which do not come into intimate contact with the skin[14]. The preferable method of application of the phenyl mercuric compound is to incorporate it with a water repellent before application to the fabric. In some cases they have been treated with an aqueous solution of phenyl mercuric acetate followed by treatment with sodium chloride solution, thus precipiatating phenyl mercuric chloride on and within the individual fibres of the textile. Phenyl mercuric acetate has also found application in the preservation of textiles formed from casein both for the protection of the casein solution and the finished product.

Certain insulating varnishes have a phenyl mercuric salt incorporated as a preservative for the insulating material on wires used in expensive and delicate pieces of equipment. Even though hermetically sealed and opened only at six months intervals, fungus growth has proved serious enough to render these machines unfit for operation without some means of preservation.

IN THE tanning industry the very nature of the processing of hides necessitates the using of preservative agents since putrifiable skins are treated with various compounds which are in themselves subject to attack by microorganisms. Both phenyl mercuric acetate and "Mersolite P" are well suited for use by tanners for control of bacteria and molds in the tanning industry. Phenyl mercuric acetate or "Mersolite P" may be used for the preservation of skins and hides while standing before use, in the preservation of agents used for treating skins and hides, disinfecting diseased hides, in preserving vegetable tan liquor to prevent fermentation, preserving all types of leather in wet stages in case of an enforced shutdown, and in general sterilization work around the premises of the tannery. A future possible use of the phenyl mercuric compounds of prime importance to the tanner is the germ proofing of leather.

Laboratory and small scale tests on phenyl mercuric compounds have shown them to be excellent agents for the control of fungi causing stain in newly cut lumber[15c]. Tests have shown that the organic mercurials are among the most effective chemicals used to control stain in both pine and hard wood lumber. The same chemicals were as effective on logs as lumber but concentrations required were about four to six times as great, because of the inability of the logs to pick up the treating solutions as well as the lumber.

In agriculture, phenyl mercuric acetate has proved itself in preliminary tests to be an effective means of treating seed, and work is in progress to find out correct methods and amounts of treatment to be used. Phenyl mercuric acetate has also been recommended for the prevention of storage rot in some vegetables and at present is being used for that purpose[16]. Organic mercurials are the basis of compounds constituting one of the most

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Insects Attacking Growing Crops

Grasshoppers, squash bug, lygus bugs, chinch bugs, Pentatomids, Colorado potato beetle, cotton boll weevil, cotton boll worm, pea leaf miner, cotton leaf worm, hornworms, cabbage looper, imported cabbage worm, diamond back moth, flea beetle, corn ear worm, soil infesting insects, such as wire worms and white grubs.

Industrial - Institutional and Household Pests

German roach, brown banded roach, American roach, oriental roach, Pharaoh's ant, crazy ant, pavement ant, citronella ant, thief ant, fire ant, harvester ant, cornfield ant, carpenter ant, Argentine ant, bed bug, confused flour beetle, yellow meal worm, rice weevil, granary weevil, black carpet beetle, silverfish, firebrat, Collembola, earwig, European earwig, household spiders, household centipede, Brown dog tick, cat fleas, dog fleas, house flies, fruit flies, sewage flies, mosquitoes, psocids, hide beetle, larder beetle, bean weevil.

JHCo

effective means of controlling brown patch and dollar spot on grass greens and fine lawns[17].

Pharmaceutical grades of phenyl mercuric compounds have been extensively used for cosmetic and pharmaceutical applications. Indications are that these may be used safely in concentrations of 0.002 per cent to 0.08 per cent in mucous membranes and within body orifices. Phenyl mercuric benzoate has been specified as an antiseptic in a concentration of 0.004 per cent in a camouflage face paint for the Armed Services[15a]. Phenyl mercuric borate is being used in the preservation of human blood plasma in a concentration of 0.002 per cent. There are several preparations being marketed at present in the form of tinctures and ointments[18] of phenyl mercuric compounds with concentrations ranging from 0.002 per cent to 0.1 per cent. Phenyl mercuric acetate in the form of a jelly has been used as a contraceptive, with excellent results[19].

Since the phenyl mercuric compounds have not been available to industry until relatively recently before the war they have not enjoyed as extensive a development as might be expected. One other deterring factor in their development has been the unusually high price for commercial usage in the early stages (in 1935 phenyl mercuric acetate was approximately $50.00 per pound[10] but, has been steadily reduced until it is about one-tenth that figure at present). Immediately before and during World War II these compounds were called for in various specifications originated by different departments in the governmental agencies [13,15]. A great deal of work was done in fungus proofing equipment which was slated for use in Pacific areas [15e], since without this protection the service life of radio, electrical and electronic equipment was greatly reduced and irreplacable units were often rendered useless by the action of fungus growths.

ONE of the most serious objections to phenyl mercuric compounds is the possibility of exposing workers and ultimate customers of the treated articles to some form of mercury poisoning. In this regard to the best of our knowledge there is no specific recommendation as to the maximum amounts of phenyl mercurials which are to be used in any product, other than those given in certain governmental specifications. One authoritative source[20] says: "It is apparent from these studies that phenyl mercuric nitrate is a mercurial of relatively low toxicity for men and animals. Phenyl mercuric chloride appears to have the same low toxicity. It seems to be clearly indicated that phenyl mercuric nitrate can disinfect the skin, disinfect instrument without corroding them, and preserve biologic products against bacterial growth without destroying their specific properties and actions. It is to be expected that different brands of the products may show greater toxicity and capacity to irritate the skin than others and some sensitive individuals may be poisoned or burned by doses that do not produce disturbance in others."

Certain hygienic measures should be enforced with the handling of any mercuric compound to prevent the ingestion or absorption of the toxic agents. The workers should wash any exposed areas thoroughly, it being especially important that the hands be washed before eating. No food should be allowed in the areas where the compounds are being handled. The inhalation of vapors of these two materials should be held at a minimum.

The use of phenyl mercurials in large concentrations which are likely to find their way either into the human system or come in intimate contact with the skin for long periods of time is not recommended, nor is use on such articles as papers which are to be used for food wrappers, adhesives which are to be tongue-lapped, etc.

Despite this handicap which can only be cleared up by additional research work, there are indications phenyl mercuric compounds can be used successfully in many new types of applications as well as those in which they have proved themselves in the past. Leather may be made germ proof as well as self-sterilizing, paper may be rot proofed, cosmetics may also be rendered self-sterilizing over long periods of time, and a variety of other therapeutic uses suggest themselves.

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Metal Polishes . . .

a polish suitable for one kind of metal may be actually harmful to others . . . hardness of the abrasive should be related to the hardness of the metal being polished

By Milton A. Lesser

A CERTAIN amount of discoloration is expected on metal utensils and equipment that are in constant use. But even objects that are used infrequently or serve only as ornaments surrender their gleam to air-borne dust and dirt and to oxidation. Tarnish, the enemy of many bright finishes, consists of metallic oxides which form on silver, brass, copper, iron and steel. Even metals which do not form these oxides, like chromium, stainless steel, monel metal, and German silver, are dulled in time by the deposition of atmospheric dirt.

Many formulas are available for making metal polishes in liquid, paste, powder, or cake form. However, a knowledge of the nature of a metal and how it will react to different treatments is essential if satisfactory results are to be obtained. As was pointed out in previous discussions (1) of silver polishes and aluminum polishes, the type and composition of a polish suitable for one kind of metal may not be appropriate and actually harmful to another. Thus, while there are many general purpose polishes suitable for various hard metals, there are also a number of more or less specialized products for brightening brass, copper, chromium steel and nickel.

Standards for metal polishes are available in the specifications of various Government agencies. For example, Federal Specification P-P-556a provides standards for powder, liquid and paste types of metal polishes. It is required that each type shall be a product, with or without finely divided abrasive, suitable for the removal of tarnish from brass, nickel, copper and other metals. It must also have good luster-producing properties and give good protection to the polished surface against tarnishing. All types of polishes must be free of acids, cyanides, grit and other ingredients having detrimental effects on metals.

In the large majority of products intended for household or general maintenance purposes, abrasive materials are the most important ingredients. In order to achieve best results, the abrasive materials should possess such fineness, hardness, and particle shape as to accomplish effective polishing without scratching. Pertinent in this connection is the Federal Specification requirement that abrasives must be of such particle size that all of the material will pass through a No. 200 sieve.

The hardness of the abrasive should also be related to the hardness of the metal being polished. Thus amorphous silica has the requisite hardness for polishing brass without scratching, but a soft abrasive like diatomaceous earth would clean this metal but would not be sufficiently hard to polish it. (2) The type of surface to be polished also warrants consideration. Thus, a highly polished surface would require mild abrasives like talc, precipitated chalk or rouge, while a duller object like kitchen utensils would be better treated with various silicious materials. (3)

Materials which clean metal by chemical, rather than abrasive action are often included in metal polishes. Often useful alone, they act as adjuncts to the abrasive component. Among the most important are ammonia, ammonium oxalate, potassium bitartrate (cream of tartar) and oxalic acid. It should be noted that a preparation containing over 10 per cent of oxalic acid requires a poison label.

The vehicle used in preparing a liquid or semiliquid metal polish is also an important consideration. Aside from serving as carriers for the more active ingredients, substances like solvents, oils, petrolatum, fatty acids, and soaps also provide beneficial effects of their own. Soap, for example, not only serves as a stabilizer, but also provides a valuable cleansing action. Solvents help to "cut" greasy dirts and thereby facilitate their removal. Oily or fatty ingredients act as lubricants for the abrasives and sometimes serve the added purpose of leaving a glossy, protective film on the polished metal. Es-

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sential oils or other perfuming materials may be incorporated in paste or liquid polishes either to cover certain odors or to impart added attractiveness. Color, always helpful to improve appearances, may be attained by the use of suitable dyes or pigments, or by the employment of tinted abrasives, like iron oxide (rouge).

LIQUID metal polishes have long commanded a most respectable market. Perhaps one factor in this popularity lies in the observation (3) that, as a rule, the liquid products are more efficient than other types of polishes where much tarnish is to be removed. Liquid polishes are often classed as being inflammable or non-inflammable. Undoubtedly, a more convenient classification from the formulation standpoint would be to divide liquid polishes into solvent types, aqueous suspensions, and emulsions.

Polishes based on naphtha or other petroleum distillate vehicles are not very important today; a fact no doubt attributable to the availability of more efficient and less hazardous products. Since solvents afford but little suspending power for the abrasives, soap is often used to stabilize the product, as in the following example: (4)

	Per cent
Red oil (oleic acid)	4.0
Ammonia water (26° Be.)	2.0
Silica	30.0
Petroleum naphtha	64.0

Water-base polishes usually consist of aqueous suspensions of abrasives stabilized with soap; often an ammonia soap formed *in situ*. Despite the presence of such suspending aids, many of these products require shaking before use to redisperse the abrasives. Thus, a rather heavy bodied liquid polish, in which the abrasives settle only very slowly and slightly and never to a hard sediment, may be made from:

	Parts
Oleic acid	5.0
Air-floated tripoli	12.0
Silica dust	12.0
Ammonia (26° Be.)	3.0
Pine oil	5.0
Water	63.0

A somewhat more complex, but very useful liquid polish is described in detail by Belanger: (6)

Oleic acid	1 gal.
Stearic acid	1 lb.
Ammonia (26° Be.)	½ gal.
Water	10 gal.
Medium silica	10 lb.
Kieselguhr	20 lb.
Colloidal clay	10 lb.
Alcohol, denatured	3 pt.

Melt the stearic acid in the oleic acid and add the hot water. Allow to cool somewhat and add the previously mixed ammonia and alcohol. Sift the mixed abrasives into the solution; stirring until the product thickens. Allow to stand overnight, stir again and fill into containers.

Preformed soap may also be used to make a water-base liquid polish, as indicated in the following formula: (7)

	Per cent
Hard soap, powdered	12.0
Water	55.0
Whiting	15.0
Kieselguhr	10.0
Alcohol	8.0

Illustrative of the way in which good chemical cleaning action may be combined with abrasive polishing effects is the preparation described by Tyler (4) as containing:

	Per cent
Silica	12.0
Ammonia soap	3.0
Ammonium oxalate	0.5
Ammonia (26° Be.)	3.5
Pine oil	1.0
Alcohol	4.0
Water	76.0

The trend toward the more extensive use of emulsion products is quite evident in the formulation of liquid metal polishes. Combining the advantages of both solvent and water base types of products, emulsion polishes offer better preparations of greater stability, and generally at a lower cost. The following formula (7) will serve to indicate the composition of a typical emulsion type metal polish:

	Per cent
Kieselguhr	5.0
Silica dust	4.0
Ferric oxide	4.0
Naphtha	19.0
Kerosene	10.0
Oleic acid	2.0
Triethanolamine	0.5
Ammonia (26° Be.)	1.5
Water	54.0

The oleic acid is mixed with the kerosene and naphtha, the abrasives then being stirred in. Continue stirring while adding the ammonia and triethanolamine. If desired, the proportion of water may be increased by another 10 per cent.

Another emulsion polish, cited in several sources, (6, 7) calls for:

	Parts
Naphtha	62.00
Oleic acid	1.00
Abrasive	7.00
Triethanolamine	0.33
Ammonia (26°Be.)	1.00
Water	128.00

Mix the oleic acid and naphtha to form a clear solution. Separately, dissolve the triethanolamine in water, stir in the abrasive, if it is of a clay type, and then add the previously prepared solution. Stir the resulting mixture at a high speed until a uniform creamy emulsion results. Then add the ammonia and mix well, but at a slower stirring speed.

Pine oil is often added to metal polishes. In small proportions it imparts a pleasant odor to the product, but in larger percentages it serves as a valuable solvent. In addition it gives body to the product and helps to hold the abrasive material in suspension. (3) An example of how it may be used is given in the following emulsion type polish:

	Per cent
Tripoli	20.0
Oleic acid	7.0
Sodium hydroxide	0.5
Pine oil	25.0
Water	47.5

In checking through the data on more specialized liquid metal polishes, one notes that a number of products are designated as brass polishes. Despite this indication of specialization, it should be pointed out that brass polish is also commonly used on nickel, bronze and copper. A product of this kind, in the form of a rather thick, white liquid, and said (2) to be successful commercially, is made from:

	Per cent
Silica (amorphous)	25.0
Sodium oleate soap	5.0
Sodium oxalate	1.0
Pine oil	4.0
Water	65.0

A rather higher degree of specialization is observed with polishes for chromium. This, however, would depend to some extent on the type of abrasive used. Thus the presence of a hard material, like pumice, would pro-

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hibit the use of the polish on household articles, particularly those of softer metals, like silver or aluminum. Ordinarily, non-tarnishing chromium requires only soap and water to restore its luster. But, with the increase in outdoor chromium hardware and the extensive use of chromium trim on automobiles, special chromium cleaners have been developed to remove the dirt and grime encountered on outdoor exposure. According to Bennett, (7) a liquid polish for chromium may be made by mixing the following ingredients in the order given:

	Per cent
Hard soap powdered	3.0
Water (hot)	53.0
Olein, distilled	5.0
Ammonia (10%)	3.0
Alcohol, denatured	16.0
Tripoli	20.0

Another example of a more specialized liquid polish is the following preparation suggested by Prinz (8) for cleaning and polishing nickel instruments:

	Parts
Prepared chalk	2
Alcohol	2
Ammonia water	2
Water	4

The patent literature, a most important index of progress, offers much information on the development of new liquid metal polishes. While many of these products are designed for industrial application, a number of them are intended for or adaptable to household or maintenance purposes. Such sources (9-12) are always well worth checking.

PASTE type products comprise a second important group of metal polishes. Such polishes may employ several kinds of materials as the vehicles for the abrasives and adjunct cleaning and polishing substances. Quite often a petroleum product, like heavy mineral oil, petrolatum or paraffin, may serve as the basis for the other components. For example, a simple, but efficient paste polish can be made readily from equal parts of paraffin and any desired abrasive, plus 1 per cent of pine oil. (13).

Fatty products, such as stearin, stearic acid, oleic acid and the like, are also used as bases for paste polishes. Frequently, these fatty substances are combined with petroleum products, as in the following formula: (7)

	Per cent
Paraffin	5.0
Stearic acid	16.0
Oleic acid	29.0
Whiting	20.0
Magnesium carbonate	30.0

The first three ingredients are melted together and the well-sifted abrasives are worked into the mixture.

Soap, often a hard sodium soap, is very frequently employed as the thickener and suspending medium in making paste polishes. An illustrative example of such a product, which must be poured into containers while still in the molten condition, has been given (4) as follows:

	Per cent
Soda tallow soap	9.0
Soda ash	1.0
Silica	30.0
Water	60.0

Another polish product of this kind, originally described by Auch, (14) and since cited in other authoritative sources, (2, 15) consists of:

	Parts
Chip soap	10
Silica dust	20
Air-floated tripoli	20
Pine oil	2
Water	48

Dissolve the soap in the hot water, add the previously mixed silica and tripoli; then add the pine oil, with stirring, and run the hot mixture into suitable containers, such as flat cans.

Indicative of the way adjuvant materials, turpentine in this case, may be included in paste polishes, is the following soap-based product: the ingredients being mixed in the order listed:

	Per cent
Soft soap	30.0
Turpentine	10.0
Alcohol	5.0
Water	10.0
Kieselguhr	20.0
Emery	20.0
Chrome oxide	5.0

Another type of polish, with an accessory suspending agent, has been described in a foreign publication, (16) as follows:

	Parts
Curd soap	5
Water	40
Methyl cellulose (5% solution)	20
Kieselguhr	15
Tripoli	10
Alcohol, denatured	10

Turning to more specialized paste polishes, there may be mentioned products designed for use on copper. A good product of this kind, suggested by Brooks, (17) comprises:

	Parts
Soap	16
Precipitated chalk	2
Jewelers' rouge	1
Cream of tartar	1
Magnesium carbonate	1
Water	Sufficient

Dissolve the soap in just sufficient water to bring it into solution on a water bath. Add the other components to the still hot solution, with constant stirring.

Highly specialized, and not intended for use on other kinds of household, is a paste cleaner for polishing chromium, as given by Small: (2)

	Per cent
Mixture of silica and pumice	55.0
Ammonium stearate	0.5
Water-soluble gum	0.2
Sodium silicate	0.5
Water	43.8

With paste polishes, as with liquid preparations, the patent literature offers a number of interesting examples of new trends and modifications. (18-21)

THE third major group of polishing products are those provided in powder form. Such polishes may consist of a single abrasive or a combination of abrasives, with or without additional materials. Providing the active ingredients in a more concentrated form, these polishes are usually applied on a damp cloth, but they may be dispersed in water to make a pasty or liquid preparation for immediate use. Not so extensively used as liquid or paste products, formulas for making these powder polishes are available from a number of technical sources. Rather easily prepared, all that is generally required is an efficient sifting and thorough mixing of the dry components.

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The majority of metal polishing powders are very simple in composition. For example, a generally useful metal polish, suggested by Crowley, (22) consists of:

	Parts
Tripoli (300 mesh)	8
Magnesia, calcined	4
Prepared chalk	16

Very often chemical cleaners are combined with abrasive polishes, as in the following effective luster-producing metal polishing powder, given in the same source as the above:

	Parts
Tripoli	9
Tartaric acid	1

Another simple preparation, described (2) not only as an effective metal polish, but also as being capable of dissolving rust from chrome and nickel, is made from:

	Per cent
Silica	91.0
Oxalic acid	9.0

Containing a number of mechanical and chemical cleaning and polishing agents, a more complex polishing powder like the following, (23) is not necessarily more efficient than its simpler competitors:

	Parts
Silicious earth	265
Red iron oxide	265
Precipitated calcium carbonate	132
Citric acid	132
Alum	132
Purified talc	74

Pulverized soap is sometimes included in metal polishing powders. Here it serves not only as an added cleansing agent, but also as a suspending aid if the polish is mixed with water. Analysis (2) of a soap-containing product showed that it consisted of:

	Per cent
Silica	73.0
Soda soap	9.0
Soda ash	14.0
Moisture	4.0

Polishing powders are also designated for more specific uses. Thus a polishing powder for copper and brass may be made from: (7)

	Per cent
Powdered hard soap	10.0
Calcium carbonate, prepared	50.0
Kieselguhr, calcined	20.0
Red iron oxide	20.0

Another powdered product, recommended for polishing chrome and nickel contains:

	Per cent
Magnesium oxide	30.0
Calcium carbonate, precipitated	30.0
Red iron oxide	40.0

While the patent literature does not present so many examples of newer powder type polishes, an occasional series of specifications does describe an improvement in the production of such items. (24)

Metal polishes in cake, brick or block form, while of importance in commercial methods for polishing and finishing metals, are of comparatively minor importance in the home. Mentioned only infrequently in modern texts, a check of the older literature indicates that these products consist essentially of abrasives and a suitable binding agent molded into suitable shapes. To use such products, a dampened cloth is rubbed over the cake to take up a quantity of polish.

Soap is often used as the binding agent and detergent aid in making these polishing compounds. According to one method, (25, 26) the following ingredients are ground together to form a pasty mass, which is then pressed into blocks:

	Parts
Powdered pipe clay	112
Tallow soap	16
Tartaric acid	1¼

As is indicated from the foregoing, the formulation of metal polishing products offers interesting potentialities for the manufacturer who may want to add a general or special item to his line. The formula, selected from the large number available, offer an experimental basis from which improved products may be developed to meet various needs.

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Tsetse-fly Repellent

Antimosquito cream Mark II, containing pyrethrum in a vanishing cream base, proved of value as a tsetse-fly repellent up to at least 6 hours after application. The repellent action was destroyed by heavy sweating associated with exposure to a strong sun. J. R. Holden and G. M. Findlay, *Trans. Roy. Soc. Trop. Med. Hyg.* 38, 199-202.

Control of Spiders

N-isopropylidene-para-phenetidine is effective for control of spiders, mites, ticks, etc. It may be applied alone, with carriers, or in solution or suspension. Wm. P. Ter Horst, to U. S. Rubber Co. U. S. Patent No. 2,397,-633.

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DDT EMULSION CONCENTRATES

By Howard A. Jones, Howard A. Titus and Marion W. Oberg*

Bureau of Entomology and Plant Quarantine, U.S.D.A.

THE development of an all-purpose DDT emulsion concentrate for use by the armed forces was described in a recent article (2). This concentrate, with xylene as a solvent, was used to prepare emulsions for the control of adult mosquitoes, flies, and other insects; as a mosquito larvicide; and for the louseproofing of clothing. Two objections raised to the use of xylene were its low flash point and the fact that DDT separated from the concentrate on standing at low temperatures. Consequently, two additional requirements were added to the five requisites of a DDT emulsion concentrate for use by the armed forces, namely, (1) the flash point of the concentrate should be high enough for safety in shipping, and (2) there should be no separation of DDT from the concentrate on storage at low temperatures.

To meet these requirements modified formulas were developed primarily for use as residual sprays for adult mosquitoes, flies, and other insects, and for mosquito larvicides where emulsions can be employed for this purpose. Because of the necessity for a higher flash point, as well as the maintenance of high DDT solubility, solvents of higher boiling range than xylene were required, and these solvents would not be sufficiently volatile for use in louseproofing clothing. This change was consistent with actual use of the concentrate, as very little louseproofing was being done and most of the DDT emulsion was being used for the other two purposes.

On the basis of preliminary tests, both of physical stability and biological effectiveness, it seemed that a solvent (either a single solvent or a mixture) for use in the emulsion concentrate should have approximately the following properties:

Flash point: Not below 110° F.

Boiling range: Not above that of kerosene with distillation end point not over about 275° C.

DDT solubility: When used in a concentrate comprising 25 per cent of technical DDT, 15 per cent of Triton X-100 (polyethylene glycol alkyl aryl ether), and 60 per cent of solvent, there should be no separation of DDT on continued chilling at 0° C. or slightly below.

Stability of emulsion: A concentrate of the foregoing formula should form an aqueous emulsion of satisfactory stability (2).

The minimum flash point of 110°F. was suggested so that the various Hi-Flash coal-tar fractions available from several sources could be included. Solvents with higher flash points, however, were more desirable for general military use.

Recent tests (4) have shown that residual deposits from solutions of DDT in solvents of low volatility are in general less effective after exposure to light than those from solutions in volatile solvents. Kerosene solutions and the standard xylene-Triton X-100 emulsion were about equally effective, whereas fuel oil solutions were the least effective. For this reason it was believed that the boiling range of the solvent should not be above that of kerosene.

With regard to DDT solubility at low temperatures, 0°C. or slightly below was believed low enough for these specifications, since much of the emulsion concentrate was being used in the Pacific area where extreme low temperatures were not encountered. Some of the formulas developed, however, would withstand cooling to much lower temperatures without separation of the DDT.

It was necessary that the emulsion formed should be of a satisfactory stability to be generally useful to the armed forces, and particularly to give good results as a mosquito larvicide.

As mentioned in the earlier paper on DDT emulsions (2), for use as an anopheline larvicide the specific gravity of the concentrate, within certain limits, was found to be less important than was at first supposed. Heavy solvents, however, such as those with specific gravities over 1.0, usually did not give stable emulsions of this type and also gave poorer results as mosquito larvicides. It was believed that the specific gravity of the solvent should not be over 1.0 and preferably not above 0.95. This property, however, appeared to be of less importance than the flash point and distillation range provided stable emulsions were formed.

Many solvents and combinations of solvents were tested. In the spring of 1944, when the problem of a higher flash point first arose, tests were made with such solvents as aromatic petroleum and coal-tar fractions, and combinations of these with cyclohexanone (to increase DDT solubility). Several commercially available fractions formed stable emulsions and gave good insecticidal results. Mixtures of some of these fractions with small proportions of cyclohexanone or isophorone also gave satisfactory emulsions. To obtain physical stability in the final emulsion comparable to that of the xylene emulsion, as required for military use, the

* This work was conducted under a transfer of funds, recommended by the Committee on Medical Research, from the Office of Scientific Research and Development to the Bureau of Entomology and Plant Quarantine. Mr. Jones is now with the Unit of Entomological Research of Dodge & Olcott, Inc., Baltimore, Md., Co-author Titus is a Corporal, U.S.A.A.F., assigned from Army Committee on Aerial Dispersal of Insecticides, Orlando, Fla.

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TABLE I.

Results of physical tests of DDT emulsion concentrates containing 25 per cent of DDT, 15 per cent of Triton X-100, and 60 per cent of various solvents, and of emulsions prepared from them.

No.	SOLVENT FOR DDT	Flash Point of Concentrate (Cleveland Open Cup) °F.	Separation of DDT from Concentrate After 3 Months at About −5°C.	Approximate Stability[1] of Emulsions Containing 1 Per Cent of DDT in		
				Distilled Water	Hard[2] Water	Sea[2] Water
1	PD-544-C[5]	192	Slight	1	1	2
2	Velsicol AR-41[3,5]	155	Moderate	1	1	1
3	Heavy solvent[4]	147	None	2	2	4
4	Velsicol AR-50[3]	240	None	1	1	3
5	Velsicol AR-60[3]	263	None	1	1	3
6	Velsicol AR-40, monomethyl cut[3]	228	None	1	1	3
7	Cumene fraction[4]	139	Moderate	1	1	1
8	Hydrocarbon oil[4]	222	None	3	3	5
9	K-327[4]	244	None	2	2	4
10	Neutral oil[4]	200	None	3	4	5
11	PD-544-B[3]	274	Very slight	1	2	2
12	Solvesso No. 3[3] 45% + cyclohexanone 15%	148	None	1	1	1
13	Tetrahydronaphthalene 48% + cyclohexanone 12%	174	None	1	1	2
14	Pale yellow Hi-Flash solvent[4] 45% + cyclohexanone 15%	132	None	1	1	1
15	Hi-Flash Solvent[4] 48% + cyclohexanone 12%	126	None	1	1	1
16	PD-544-C[5] 48% + cyclohexanone 12%	164	None	1	1	1
17	PD-544-C[5] 45% + isophorone 15%	196	None	1	1	2

[1] Approximate stability was graded as follows: (1) No breaking (separation of oil phase) in 24 hours (satisfactory); (2) no breaking in 2 hours, only slight breaking in 24 hours (moderately satisfactory); (3) no breaking in 2 hours, marked breaking in 24 hours; (4) some breaking in 2 hours, marked breaking in 24 hours; and (5) marked breaking in 2 hours or less.

[2] Artificial hard water used contained 500 p.p.m. of magnesium sulfate, 500 p.p.m. of calcium chloride, 250 p.p.m. of sodium bicarbonate. Natural sea water used.

[3] Aromatic petroleum fractions containing chiefly methyl- and polymethylnaphthalenes. Solvesso No. 3 is a hydrogenated aromatic petroleum fraction.

[4] Coal-tar fractions; cumene fraction is chiefly pseudocumene; K-327 is chiefly methyl- and polymethylnaphthalenes; others are standard coal-tar fractions.

[5] Physical properties of Velsicol AR-41: specific gravity 0.912, flash point (C.O.C.) 149° F., boiling range 159° - 245° C.

emulsifier content of the concentrate was increased from 10 to 15 per cent.

As a result of this preliminary work, a series of formulations was prepared to illustrate the types of solvents tried for this purpose. These formulations are shown in Table I., together with results of physical tests of both the concentrates and the aqueous emulsions obtained from them. Technical DDT was used in all the concentrates. Included in the table are some solvents with a boiling range higher than mentioned above, merely to show the physical stability of emulsions obtained with them.

The effect of chilling on the solubility of DDT was determined by holding samples at about −5° C., without adding seed crystals, for 1 month. At this time no separation of DDT had occurred in any of the concentrates. The samples were then seeded with pure DDT crystals and held at −5° C. for an additional 2 months, when the observations recorded in Table I. were made. The physical stability of emulsions containing 1 per cent of DDT was determined by the method described in a previous article (2). The physical properties of the solvents used were given by Jones *et al.* (3), except for those of Velsicol AR-41 which are listed in a footnote in Table I.

FORMULAS 1, 2, and 7 have sufficiently high flash points and form satisfactory emulsions, but show some separation of DDT on chilling at −5° C. These concentrates would be entirely satisfactory for use where long storage at below freezing is not required, and formula 1 has been recommended to the armed forces for such use. It is probable that these concentrates, particularly No. 1, would withstand storage at 0°, or slightly above, without separation of DDT.

Formulas 3, 8, 9, and 10 are obviously unsatisfactory because of the instability of the emulsions made from them, particularly in sea water; 4, 5, and 6 appear satisfactory if stable emulsions in sea water are not required. Formula 11 gives fair emulsions, but the boiling range of this solvent is considered too high to be useful in residual sprays.

From all standpoints formulas 12 through 17 appear to be among the best, as they show no separation of DDT on chilling and give satisfactory emulsions in all types of water. Velsicol AR-41 could be substituted for PD-544-C in formulas such as 16 and 17 with satisfactory results. Concentrates using Hi-Flash solvents from coal-tar have lower flash points than the others and would not be satisfactory for situations where a very high flash point is desired. In earlier tests formulas using Solvesso No. 3, tetrahydronaphthalene, and Hi-Flash solvents alone, without cyclohexanone or other auxiliary solvent, showed marked separation of DDT at low temperatures. Such formulas, however, have been used with good results in large-scale tests at this laboratory, and could be useful where storage at low temperatures is not required.

The emulsifier content of these formulas was necessarily high because of rigid military requirements, especially as to emulsification in sea water. For most civilian uses much lower proportions of emulsifier are satisfactory. Emulsifiers other than Triton X-100 may also be found to give more satisfactory emulsions with these solvents. For example, in some tests

(*Turn to Page* 165)

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TECHNICAL Briefs

From Current Literature in the Sanitary Products Field

Germicidal Textile Treatment

Oil treatment of bedclothes has been shown to effect significant reductions in the concentration of airborne organisms, and offers an encouraging approach to the partial control of respiratory infections. Until recently textiles were impregnated with dust-laying oils in the commercial laundry by the addition of an emulsifiable oil to the last water rinse. This procedure was rather wasteful and to overcome this, a simple technique for quantitative impregnation of either cotton or wool with a single stable and inexpensive emulsion has been developed.

The procedure for practical application in laundries is as follows:

(1) The textiles are washed in the usual manner, allowing sufficient rinsing for complete removal of soap.

(2) A stable and readily emulsifiable, nonionic, oily material is added to the last water rinse, resulting in a stable oil-in-water emulsion after a few revolutions of the laundry rotator.

(3) During continued agitation a cationic germidical agent is added, transforming the nonionic emulsion into a bactericidal cationic emulsion. The negatively-charged cotton and woolen textiles quantitatively remove positively-charged oil droplets from the emulsion. After a few minutes of the usual laundry agitation the original milky emulsion loses its opalescence and appears as a clear, water fluid. This visible change serves as an end point, indicating complete absorption of oil by the textile.

(4) The water fluid is drained off, and the textiles are finished in the usual laundry manner.

Many thousands of woolen blankets, cotton sheets, and pillowcases have been tested for impregnation, with a uniform degree of success. However, the laundrying process is not a prerequisite for oil impregnation.

The advantage of using a positively-charged emulsion is clearly seen in both the laboratory and commercial laundry. Prolonged manual agitation of cotton or woolen textiles in the original nonionic emulsion produces no visible clearing of the fluid. However, on addition of the cationic detergent to such an emulsion, a rapid and complete removal of oil droplets ensues. The ratio of the emulsifiable oil to the cationic detergent per given weight of textile is a critical one. Colored textiles require less detergent than white articles. "Roccal," a quartenary ammonium compound, appeared to be the most suitable cationic agent.

Blankets treated according to the above procedure and containing 2.5-3 per cent of oil by weight are not oily to the touch, nor are they distinguishable from normally-washed controls in appearance or texture. The approximate cost of treatment of a blanket, over and above the usual washing charge, is about 3-5 cents, while the cost for a sheet is 1-1.5 cents.

Experiments involving shaking or mechanical agitation of blankets impregnated with oil emulsion have shown them to retain over 90 per cent of bacteria and dust when compared to untreated controls. The effective duration of a single treatment is at least 6 months. Laboratory evidence suggests that the "Roccal" retained in the blankets may be bactericidal to organisms settling on the textiles. The Research Staff, U. S. Navy Med. Research unit No. 1. *Science* 104, 60-61 (1946).

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DDT Use on Roaches

Dr. Hubert Frings, head of the biology department at Gustavus Adolphus College, St. Peter, Minn., offers a suggestion on making DDT more effective against roaches. He recommends in the *Midland Cooperator,* house organ of Midland Cooperative Wholesale, Minneapolis, that sugar or starch be sprinkled on the DDT after it has been placed around kitchen sink or on cupboard shelves. Dr. Frings explains that roaches do not taste with their feet as do flies and other insects, hence do not swallow enough DDT to make it effective. Being fond of sugar or starch, he says, they will eat and absorb the poison through the mouth.

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Particle Size in Aerosols

A method of determining the size of the droplets in liquefied-gas aerosols is described. The aerosol is sprayed into a settling chamber. The droplets are allowed to fall onto glass slides coated with a very thin layer of oleophobic mannitan monolaurate in 1 per cent alcohol solution.

The particle size of aerosols increases as the concentration of nonvolatile materials in the liquefied gas increases. The optimum in toxic efficiency for a pyrethrum-sesame oil mixture is 16 per cent nonvolatile material. With dibutyl phthalate as the nonvolatile material, the most effective aerosols contained 15 per cent nonvolatile. Spray nozzles that allow some drop in pressure and partial ebullition before the liquid is expelled proved most efficient. Some liquids are more easily dispersed than others. Those containing high-boiling aromatic petroleum products consisting chiefly of alkylated naphthaleness and methylene chloride form many small particles. Aerosols with droplets of 2-10 microns radius are most effective in a nearly static atmosphere against free-flying

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These improvements in thread design provide easy starting; an even and level sealing pressure on the liner around the full top surface of the container finish; and highly effective seal-holding qualities for the Anchor C.T. Cap.

insects. L. D. Goodhue and R. L. Riley. *J. Econ. Entomol. 39,* 223-6 (1946).

British Anti-Midge Lotion

A program of investigation is being carried out in Britain on the habits, prevalence and prevention of the midge pest, for the correction of which the Scientific Advisory Committee of the Department of Health for Scotland prepared a D.M.P. lotion, now on general sale throughout the country. This committee has delegated duties to a Midge Sub-committee to carry out similar and more detailed investigation, with the intention of eliminating the pest at its source. No such detailed research had been previously undertaken, it is claimed, and little is known of the breeding grounds or habits of the twenty varieties of midges common to Britain.

As soon as a midge bites, it is being trapped in a special devised pipe and taken for identification and inspection. When a sufficient volume of data has been accumulated, a policy of mass prevention will be adopted to prevent the breeding and development of the pests. Areas in the west of Scotland are particularly affected by midge pests.

Gama 666

The pure gamma isomer of hexachlorocyclohexane, called gamma 666, melting at 112.5°C., was used in comparative tests with DDT. The approximate LD 50 for gamma 666 in the cockroach (*Periplaneta americana*) is 4.6 mg. per kilogram when applied to the body surface, and 3.4 mg. per kilogram when injected intra-abdominally dissolved in acetone. An approximate equivalence, similar to that noted above, between surface and injection toxicity for the roach has been reported for DDT. This emphasizes the importance of the absorptive capacity of the insect body surface for contact poisons. The approximate LD 50 for gamma 666 applied to the body surface is 0.4 mg. per kilogram for the newly emerged fly (*Musca domestica*). For older adults the LD 50 is about 0.8 mg. per kilogram for *Musca* and 0.6 mg. per kilogram for *Calliphora*. This decrease in sensitivity as the fly ages is less than reported for DDT. Gamma 666 is about twice as toxic as DDT for the cockroach and is more toxic than DDT for flies. It causes knockdown and death more rapidly than does DDT. J. Savit, J. J. Kollros, and J. M. Tobias. *Proc. Soc. Exptl. Biol. Med. 62,* 44-8 (1946).

Testing DDT Films

In this method the test insects, houseflies, are forced to come in contact with films containing DDT for a specified time under controlled conditions and direct observation. A procedure is devised for transferring flies from breeding jars to test chambers and to recovery chambers. Preparation of test paints by milling or grinding with DDT, or by adding DDT dissolved in an organic solvent compatible with the paint is described.

The paint is applied to sheets of sized cardboard with a doctor blade to give a definite thickness of coating over a definite area. After the film is dry, the sheet is rolled in the form of a hollow cylinder of a diameter to fit into the hole of a fly-rearing cage. The free end of the cylinder is capped with a Petri dish; 50-100 flies are permitted to pass from the cage into the cylinder. The time of contact with the walls is adjusted to give a critical kill of the flies. The flies are then transferred to recovery cages.

Benzene hexachloride, DDT and several other insecticides have been tested by this method. Advantages and disadvantages of the method are discussed. M. W. Westgate and A. N. Bolton. Natl. Paint, Varnish, Lacquer Assoc. Sci. Sect., Circ. 715, 26-33 (1946).

DDT Preparation

The effect of time, temperature, acid strength, and excess chlorobenzene on the condensation of chloral and chlorobenzene in the presence of sulfuric acid, to give DDT, was studied. When 98-99 per cent sulfuric acid was used with 4 mols of chlorobenzene per mol of chloral at a temperature of about 15°C. for 5 hours, 95-98 per cent yields of DDT could be obtained. H. S. Mosher, M. R. Cannon, E. A. Conroy, R. E. Van Strien, and D. P. Spalding. *Ind. Eng. Chem. 38,* 916-23 (1946).

Clothes Moth Control

An experiment to control clothes moths, *Tineola biselliella,* by means of thermal DDT aerosols generated by a Todd Insecticide Fog Applicator is described. The following formulas were used: (1) 1 part of 10 per cent DDT in a high-boiling aromatic petroleum solvent plus 3 parts of carbon tetrachloride; (2) same as 1 but with 0.5 per cent pyrethrins added; (3) 12.5 per cent DDT in an emulsion containing equal parts of water and an emulsifiable concentrate containing 25 per cent of DDT; (4) 8 per cent DDT in a mixture of carbon tetrachloride and high-boiling paraffin petroleum solvent.

Fogging required about 15 minutes per floor and the use of about 1 pound of DDT. Fogs from formulas 3 and 4 were irritating to eyes, nose, and throat; those from the other formulas were relatively nonirritating. Nearly 100 per cent of the moths were killed by the fog, and residues remained which killed some of the moths and larvae that survived. Thermal aerosols appear to have special advantages for controlling insects inside of buildings containing nonfood materials. D. L. Collins and R. D. Glasgow. *J. Econ. Entomolu. 39,* 241-5 (1946).

Killing Cattle Ticks

DDT in turpentine and in kerosene was emulsified with liquid soap to make mixtures containing 0.1, 0.2, 0.5, and 1.0 per cent DDT. The preparations were sprayed on cattle heavily infested with ticks. In turpentine emulsions at 0.2 and 0.5 per cent, DDT killed 80-90 per cent of the larval, nymphal, and adult male ticks. A single application of 0.5 per cent DDT in kerosene emulsion killed all stages of the ticks in a few minutes. Turpentine or kerosene emulsion alone have practically no lethal value. DDT acted on the ticks as a stomach poison. The emulsion can be used as a hand dressing, thus eliminating the cost and complications involved in dipping and spraying. B. N. Soni. *Current Sci. 14,* 334.

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Liquefied-gas aerosols, in various formulations, were tested against houseflies and mosquitoes in a Peet-Grady chamber. The original formula was greatly improved by increasing the nonvolatile content, adding more sesame oil, another synergist—piperonyl cyclohexanone—DDT, benzene hexachloride, and suitable solvents. In small containers, carbon dioxide was a suitable propellent for aerosols. E. R. McGovran, J. H. Fales, and L. D. Goodhue. *J. Econ. Entomol. 39,* 216-19 (1946).

DDT Analysis

A microscopic method for analysis of mixtures of organic compounds is proposed, which depends on the influence of impurities on the rate of crystallization of the major component from the melt. The method is applicable to a large number of industrially important systems, including almost any organic reaction product. The application of the method to the determination of *para, para'*—DDT in technical DDT is described. It is possible by this method to analyze samples of technical DDT on a routine basis of one sample every 10-15 minutes with an accuracy of better than ±0.5 per cent *p, p'*—DDT. W. McCrone, A. Smedal, and V. Gilpin. *Ind. Eng. Chem., Anal. Ed. 18,* 578-82 (1946).

DDT Impregnated Mantle

A novel application of DDT for killing flying insects has been developed by DDT Lite, Inc., Los Angeles. A wire screen or mantle to which is attached a DDT impregnated white textile flocking is fitted around a standard light globe by a snap-on arrangement or special light is enveloped in the wire cage. Insects, attracted by the light, perch on the flocking, absorb DDT and fly away to die. The light must be kept out of reach of animals and children.

Mosquito Control in Houses

Large-scale spray tests with cresol-kerosene, pyrethrum-kerosene, pyrethrum aerosol, and dry pyrethrum as agents, showed pyrethrum aerosol to be preferable, with pyrethrum-kerosene next best in order of labor economy. L. G. Eddey. *Trans. Roy. Soc. Trop. Med. Hyg.* **38,** 167-87; through Chem. Abs.

New Contact Insecticides

In preliminary tests of insecticides recently developed in Germany and England, the materials were used as oil sprays and dusts on lice and bedbugs. "Lauseto," probably containing in addition to DDT, 2,2-diphenyl-1,1,1-trichloroethane and 2-phenyl-2-chlorophenyl-1,1,1-trichloroethane, was ¼ as toxic to lice as DDT. "Gix," with the active constituent 2,2-bis-(para-fluorophenyl)-1,1,1-trichloroethane, melting at 45°C., was much less toxic than DDT. "T. D. E.," 2,2-bis(parachlorophenyl)-1,1-dichloroethane, melting at 111°C. was about 1/3 as toxic as DDT. "Lauseto Neu," para-chlorophenyl chloromethyl sulfone, melting at 118°C. was twice as toxic as DDT but of limited use because of its very low mineral-oil solubility. J. R. Busvine. *Nature* **158,** 22 (1946).

Mildewproofing Textiles

Protection against *Chaetomium globosum* and all of the cellulose-decomposing organisms occurring in heavily infested soil is afforded by impregnation of cotton fabric with 0.25 per cent of 9,10-phenanthraquinone solution, washing, and air drying. W. P. Ter Horst, to the U. S. Rubber Co. U. S. Patent No. 2,401,028.

Parasiticide

2-Chloro-1,4-naphthoquinhydrone is an effective insect repellent, germicide, mildew preventive, and general fungicide. E. C. Ladd, to U. S. Rubber Co. U. S. Patent No. 2,396,665.

Spot Treatment for Flies

DDT fly sprays need not be applied indiscriminately over extensive areas, but only where flies are known to collect in numbers. A 5 per cent concentration in odorless kerosene suffices for such spot treatment. H. L. Sweetman. *J. Econ. Entomol. 39,* 380-1 (1946).

Athletes' Foot Preparation

Evaluations of fungicides made on American naval volunteers have corroborated the superior efficacy of a mixture of undecylenic acid and zinc undecylenate for prevention of athletes' foot. The mixture is not irritating or sensitizing and appears to be more effective in powder rather than in ointment form. In the supervised tests, more than 1800 men employed the undecylenic preparation, more than 2,000 used other preparations, while more than 1600 used none at all in order to compare results. Fungal infection of the feet developed in 28 per cent of trainees who did not use prevention. Regular dusting with the new powder cut infections to 4 per cent. Under the same conditions 15 per cent developed infection while using powder containing boric and salicyclic acids.

The most effective mixture tried contained 20 parts by weight of zinc undecylenate, 76 of talc, and 2 of undecylenic acid. It seems possible that an effective ointment if properly compounded could be prepared from the same active ingredients. *Soap, Perfumery & Cosmetics 19,* 634 (1946).

Infrared Applied to DDT

Infrared spectroscopy provides a valuable tool for the chemical characterization of technical DDT, including detection of the several isomers and impurities, and quantitative estimation of DDT-content. This technique has been applied in establishing the purity of commercial samples and in determining low concentrations of DDT in residues and dispersions. J. R. Downing, W. V. Freed, I. F. Walker, and G. D. Patterson. *Ind. Eng. Chem., Anal. Ed.*

Insect Powder

An insect powder for use on human or animal hosts consists of powdered naphthalene 50 parts, ground derris root to give 1 per cent of rotenone in the final product, about 20 parts, a high-boiling tar acid 2, sulfamic acid 0.85, and talc or china clay 27.15 parts. Copper, McDougall & Robertson Ltd., and R. S. Cahn. British Patent No. 570,537.

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DDT EMULSION CONCENTRATE

(*From Page* 157)

Triton X-155 (polyalkyl aryl polyether alcohol), and certain related emulsifiers, gave somewhat better emulsions of PD-544-C than did Triton X-100. For many civilian uses higher proportions of DDT may also be employed.

Tests were also made to determine the effect on plastics of formulas 1, 12, 15, 16, and 17 applied as residual sprays. In 24 hours the residues from these formulas, applied either as a concentrate or diluted with water, had no effect on methyl methacrylate and cellulose acetate plastics. They had only a slight effect on polyvinyl chloride acetate, but a definite effect on nitrocellulose plastic. This effect was less with formula 1 than with the others.

Laboratory tests of emulsions made from concentrates of the type in Table I. that were satisfactory from the physical standpoint have shown these emulsions to be as effective, both for mosquito larvicides and residual sprays against adult mosquitoes and houseflies, as the standard xylene-Triton X-100 emulsion. Formulas such as 1, 12, 15, 16, and 17 have also been used with satisfactory results in field tests as mosquito larvicides.

The formulas in Table I. serve only as examples of the possibilities in this field; other satisfactory solvents and combinations of solvents are also available.

Summary

Several improved formulas for DDT emulsion concentrates were developed for military use to meet the additional requirements of higher flash point and better retention of DDT at low temperatures. These formulas were designed especially for preparing emulsions to be used as residual sprays for adult mosquitoes, flies, and other insects, and for mosquito larvicides where emulsions can be used for this purpose.

Suggested formulas comprise 25 per cent of technical DDT, 15 per cent of Triton X-100 (polyethylene glycol alkyl aryl ether), and 60 per cent of solvent. Solvent mixtures comprising cyclohexanone or isophorone, as auxiliary solvents, with aromatic petroleum fractions such as PD-544-C and Solvesso No. 3, with coal-tar fractions such as the Hi-Flash solvents, or with solvents such as tetrahydronaphthalene, gave concentrates which met all requirements including retention of DDT on storage at slightly below 0° C. Aromatic petroleum fractions such as PD-544-C and Velsicol AR-41 (chiefly methyl- and polymethylnaphthalenes), and a coal-tar fraction such as Cumene fraction, when used without auxiliary solvents, gave concentrates which were satisfactory provided storage was to be at temperatures somewhat above 0° C. Other satisfactory solvents or combinations of solvents are available.

Lower proportions of emulsifier may be used where emulsification in sea water is not required. Emulsions made from concentrates of the type suggested have given satisfactory results as mosquito larvicides and as residual sprays against adult mosquitoes and houseflies.

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FATTY ACID SELECTION

(*From Page* 45)

have never seen a pound of soft soap made outside the laboratory. The combination of soda and potash does afford some modification of the product such as shaving soaps and various liquid soaps. But in the final analysis such products must still be considered mixtures, with the properties of each soap present according to the ratio of the alkalis.

Two other modifying cations of frequent use are ammonia and ethanolamine. The ammonium soaps are unstable giving off ammonia and forming the stable but less soluble acid soaps. Their industrial use is confined principally to non-detergent emulsion work. They are very hydroscopic, a property which diminishes with an increase in chain length. The mono,-di and tri ethanolamines react readily with the fatty acids to give very mild soluble soaps useful in cosmetics, shaving creams, etc. They react with potash soaps to form double salts of potassium and ethanolamine. This differs from the behavior of potassium with sodium soaps under similar circumstances. Although mention is made of only one organic basic compound with the fatty acids, others are not excluded, and it is usual to consider such compounds as under the domain of soaps. One complex example cited by Holt (U. S. Pat. 2,079,613) is monophenyl cyclohexanol ammonium stearate said to be useful as a dispersing agent for hydrocarbon oils, paints and waxes. Another is guanidine stearate.

IT IS to be hoped that the above remarks on the physical chemistry side of the fatty acids may provide the reader with a better understanding of the meaning of emulsion, wettability and detergency and assist him in relating them to practical problems of the industry. A few examples will illustrate what is meant: When fresh, well rendered, refined and bleached tallow is saponified in the kettle, the resulting lyes are clear and almost colorless. If the tallow has been ill treated in rendering, and oxidized products are present such as the hydroxy acids, saponification will bring down a highly colored lye even though the refined and bleached samples match perfectly in all other respects in going to the kettle. This is due in part to the formation of water soluble hydroxy acid soaps which cannot be salted out. Laboratory tests along these lines are frequently employed where the quality of a high grade toilet soap is involved. Again, since a decrease in chain length of the fatty acids increases water solubility, it is to be expected that soap lyes from coconut oils when recovered for glycerine under normal conditions would tend to have a higher odor due to such carried-over products.

On the same basis highly unsaturated oils where hydroxylation may

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have occurred would likewise be objectionable. This has been confirmed by experience and for the best grades of odorless distilled glycerine, lyes from high grade tallow stock are found best. Again, when saponifying oils with caustic soda, it is the usual practice to add some oil and then pump in the alkali and the balance of the oil together as saponification progresses. With fatty acid stock however, as in the manufacture of soft soaps, it is usual to pump the acids into the alkali so that the fatty acids are completely neutralized at once to avoid formation of the difficult soluble acid soaps. Again, from a study of the soap phases and their transition temperatures, the effect of change in plodding temperatures of a toilet bar soap can be better appreciated. Possibly due to this effect, our future milling procedure may be altered.

—— ♦ ——

In the extraction of cottonseed with several organic solvents, the composition of the extract obtained with a given solvent will vary from seed specimen to seed specimen, and the composition and quantity of the extract obtained with a given seed specimen will vary with the nature of the solvent. V. L. Frampton and H. H. Webber. *Oil & Soap 23*, 318-23 (1946).

NAIDM MEETING

(*From Page* 133)

proper food sanitation is the food handler himself. In tracing the manner in which foodstuffs become contaminated, Mr. Macnab pointed out that the personal cleanliness of food handlers is the most difficult problem in food sanitation. He made a number of suggestions regarding proper means of educating food handlers, stating that personal cleanliness and clean habits are the most important virtues, carefulness in handling and storing foods second, care in dispensing of foods third, and finally maintenance of clean and sterilized utensils.

Mr. Macnab told of the extensive knowledge needed as prerequisite to the proper designing of alkaline detergents, and stated that cleanliness and sterilization of dishes and utensils can be completely efficient if recourse is taken to three principal operations: the first step is the scraping of used dishes before washing, which is a very important step; the next step is washing, which is submitting properly stacked dishes in metal racks having spaces between each utensil and subjecting them to water which has a temperature of 135° F. plus a dishwashing compound. The compound must be added from time to time, either manually or automatically to maintain alkaline level; the next important step is sterilizing dishes and utensils by submitting the dishes and utensils to water having a temperature of 180° F. for at least 2 to 3 minutes. He recommends the use of alkyl dimethyl-benzyl-ammonium-chloride as an effective bactericide.

In discussing refrigerator sanitation, he pointed out that refrigerators are not sterilizers and cold storage will not render a food safe once it has been infected by harmful bacteria.

He recommends medical inspection or examination of food handlers but admits that in a large city, its cost would be prohibitive. The best approach to the problem, he feels, is through continued education.

(*Turn to Page* 171)

SUPER MARKETERS

(*From Page* 55)

store has previously sold in a year. He told, also, of another display of 15½ tons of the product which sold 20,000 packages in one month.

O-Cedar Corp., Chicago, showed samples of their thirteen different household sanitation products with stress on three new ones, a synthetic rug and upholstery cleaner, "O-Dac" pine spray deodorizer for the home, and "Perma-Moth," for mothproofing fabrics. Charles Dupuy, who has recently been appointed in charge of demonstrations for the company, also pointed out the merits of a new type display rack, designed for presenting "O-Cedar" products in supermarkets.

"Sage Refresher," a wick-type deodorizer for the home, made by Sage Labs., New York, was shown by Harry B. Weil Associates, Chicago, distributors. Plans are being developed for promoting the product for industrial as well as home use, Mr. Weil stated.

Carbona Products Co., New York, had four synthetics on display, a cleaning fluid a wall wipe, shoe whitener and a soapless lather detergent. J. E. Kigel, vice president for sales, in charge.

Blue Suds Co., Detroit, displayed their line of laundry blueing withIsrael Katz in charge. Wilbert Products Co., New York, was also on hand with Sidney J. Weinberger, sales manager, and his staff demonstrating their "No-Rub" line of waxes for floors and furniture.

ALKYL ARYL SULFONATES

(*From Page* 48)

been put into the dish. The dish has been kept in a dark room and photographed with a flashlight. It will be noted that the cockroaches have avoided that side of the dish which has been washed with the Nacconol."

5) Detergents of this class are effective at extremely low concentrations, i. e., concentrations of about 0.01 per cent. At these low concentrations the detergents can float off oil, break emulsions, lower surface tension, and clean hard surfaces if there is a scrubbing action.

THE properties of the alkyl aryl sulfonate detergents enumerated above, as well as the rapid washing action already described, have led to special commercial uses. A review of some of these special uses will show how the particular properties of the alkyl aryl sulfonates have made them useful in cleaning preparations. Consider, for example use in a large hotel which is continually confronted with the problem of cleanliness.

Starting at the outside of the building, there is the stone front to clean. These stone fronts are very tough cleaning jobs. The cleaning is generally carried out with acid cleaning preparations. An alkyl aryl sulfonate is added to speed up the cleaning and to improve the finished work. If adjacent areas on a building are cleaned with acid cleaners, one of which contains a detergent and one of

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which does not, it is easy to see the line of demarcation where the use of the detergent has given a cleaner job. Obviously, the first requirement of a detergent which is to be used in acid building cleaners is that it be stable and effective in acid solution. This requirement would rule out any cleaning agent which was available 25 years ago. In the second place the detergent must be effective in cold solution. No building surface can be heated up with a pail of warm water. On the contrary, the cold building surface quickly cools the washing solution. For this reason, the detergent used must be one which is effective in cold acid solution. The detergent should also lower the surface tension so that the excess washing solution drains away quickly and does not leave the acids to continue their attack on the brick or stone.

Coming inside the building, there are walls to be washed. These walls are usually painted. The cleaner for washing walls must also be effective in cold water. It should clean quickly. There are two kinds of paint cleaners: One is an alkaline paint cleaner which is effective because it takes off the outside layer of the paint. Such cleaners are necessary and effective where dirt is imbedded in the paint. The cleaning action is very much speeded up and made more uniform when a synthetic detergent is added. When it is desirable to avoid injury to the gloss of the paint, neutral cleaners should be used. The alkyl aryl sulfonates have no buffering action because they are salts of strong acids. Products are marketed which are substantially neutral. Their solutions have no more effect on paint than water alone. They clean quickly and well. Strong solutions are advisable where greasy spots are to be removed, but for general purposes solutions of very low concentration are preferred. It is desirable to have a detergent which is effective at low concentrations in order to avoid leaving an objectionable residual film of detergent on the wall. The alkyl aryl sulfonates may be used at concentrations so low that it is possible to paint directly over them without first rinsing them off with cold water. Such cleaners are exceedingly economical to use. They are easy to apply, no rinsing is necessary, and they are not destructive to the gloss of enamels or paint.

Neutral solutions such as are used for cleaning walls are also effective for cleaning windows. Here, also, a detergent which is efficient at exceedingly low concentrations in cold solution must be used. In window washing it is particularly important that no residual greasy film be left. Windows can be washed with water alone. The synthetic detergents are added to make possible a quicker and better job.

Next there are rugs to be cleaned. Rugs can be washed with soap. That is the way the Oriental rug dealer washes them, but it is a difficult cleaning operation. It is almost never attempted by individuals. Rug washing is carried out on a large scale by the use of machinery.

Rugs are very easily and inexpensively cleaned by solutions of alkyl aryl sulfonate detergents. They are cleaned so easily and quickly that most people who use synthetic detergents in their homes wash their own rugs with them. No rinsing is necessary. The residual detergent is not destructive to the rugs, nor does it develop a rancid smell. As a matter of fact, it is helpful in keeping out the clothes' moth.

Coming to the bathrooms, there is again encountered the problem of washing cold surfaces. The alkyl aryl sulfonates simplify the washing of tiled surfaces, and the solutions cause no injury to the gloss of the tiles. The washed floors are not slippery because there is no fatty material in the alkyl aryl sulfonates. There is a saving of time in the cleaning of bowls and tubs, particularly in hard-water areas where lime soaps gather on the sides. It is not necessary to wash away the residual detergent, which offers the bowls and tubs some protection against further soiling. In bathrooms the deodorant action is helpful. The residual material that is left on the surface tends to hold odors which have not been washed away. This property is particularly valuable in areas where people become sick or where the material to be cleaned up is acid. In such cases, and in bathrooms, the bactericidal action is very useful in destroying bacteria which would otherwise develop offensive odors and which in some cases are health hazards.

In the hotel kitchen, cleaning may be done with hot or cold water. A large number of the proprietary dishwashing compounds now contain surface active agents. Cleaner, brighter dishes are obtained in a shorter period of time. The low surface tension contributed by the detergent avoids the formation of drops on the dishes. No dishwashing composition is really complete unless a surface active agent has been added to lower the surface tension so that the washing water will readily drain from the washed dishes.

Then there are vegetables to be washed. They could not, of course, be washed with soap. They can be washed with water, but sand, insect fragments and insecticides are much more easily and more completely removed if a very small amount of alkyl aryl sulfonate is present in the wash water. It is important that such products be non-toxic and free from objectionable taste.

The kitchen has refrigerators which must be cleaned. The surfaces are very cold, so the detergent must be effective in cold solution. The residual detergent is easily rinsed away, but if left on the surface, it is effective in controlling mold, which is a problem in refrigerators.

Finally, there is the area in front of the hotel. One part of alkyl aryl sulfonate in 10,000 parts of water used in a pressure sprayer will accomplish wonders in cleaning up the area from which dirt is tracked into the hotel. This solution under pressure washes the grease from the street and floats it down to the sewers. The street is washed so clean that automobiles cannot skid even though the street is wet.

Research studies on the application of the alkyl aryl sulfonates are continually opening up new uses in new fields. Improved alkyl aryl sulfonates are being developed which will accomplish even more than the present sulfonates. So great an advance has already been made in the development and application of these detergents that there seems to be no end to new uses and new demands for the material. The goal of all of these studies is an easier way to make our surroundings cleaner and brighter.

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NAIDM MEETING

(*From Page* 167)

Dishwashing Detergents

Commenting on the question of "Can the Detergent Value of Dish-Washing Compounds be Determined?", W. D. Tiedeman, Chief, Bureau of Milk Sanitation, New York State Department of Health stated that discrepancies often show up between the results expected from a compound of a certain specification and the results actually found. The answer to the evaluation of a test should be predicated on whether the detergent is to be used for washing by hand or by machine. "Use" tests help to give the buyer a better idea of the performance and value of a compound.

He mentioned that nine qualities are expected of a good detergent, namely it must emulsify fats, deflocculate food particles, disperse solids in a liquid, wet surfaces of utensils, rinse freely, not stain or leave a residue, be non-irritating to the skin, and be non-poisonous.

Dr. Tiedeman also commented that the hardness condition of water is a factor that is not always handled wisely. He recommended that hardness of water should be reduced by conventional pre-treatment methods rather than by resorting to detergent compounds to reduce hardness during washing.

Pointing out that since dish water in itself is such a good culture medium for growing bacteria, the development of detergents with germicidal or bactericidal properties would be highly desirable. He stated that U. S. Public Health Service tests are practicable and reliable but that further work is being carried on at the Cincinnati laboratories particularly to standardize soil type and agitation.

Solvent Wax Progress

Jacob Kahn, president of Windsor Wax Co., Hoboken, N. J. told the assembly that considerable progress has been made in the development of solvent waxes in the past few years and that the publishing of the German patents, the experience gained during the war, and the plans for research in the future will result in a number of new products appearing on the market in the next few years.

His report, "Developments in Solvent Waxes," mentioned that in addition to the solvent paste and liquid wax, there are at this time some other types of solvent floor waxes. He mentioned pigment waxes, hot process wax, solvent stain waxes of the penetrating and the surface type, and he gave details on Federal specifications, mentioning that the specifications are not always good and do not stand up in results as well as those furnished by the better sanitary supply trade. He stressed the fact that as a result of present market conditions, a number of inferior products are now on the market, and that if quality is not maintained regardless of price resistance, harm will eventually come to the reputation of solvent waxes as it has to the water emulsion waxes.

Tack of Wax Films

"A Possible Method of Determining Tack of Self-Polishing Wax Films" was discussed by Melvin Fuld, Fuld Brothers, Baltimore. Mr. Fuld gave details on a number of methods now in use and pointed out that the apparent dry-point on a wax film is reached more quickly than it is on a paint film. He described a new apparatus which, by measuring the displacement of a known weight along a calibrated scale, could measure tack in terms of a numerical figure. By use of such a device, it could be determined at what point a tack-free wax becomes tacky under pressure.

Surface Active Cations

The paper on "General Properties and Non-Germicidal Uses of Surface Active Cations," by Robert R. Ackley, Onyx Oil and Chemical Co., Hoboken, N. J., was illustrated with a number of slides offering data on the precipitation of dyes and various other organic materials by surface-active cations. Conductivity curves for these agents were explained and the effect of time on surface tension of the cationic agents was shown. In the more concentrated solutions of surface active cations, it takes as long as ten hours for an equilibrium to be reached.

In discussing the reactions and properties of surface-active cations, Mr. Ackley mentioned a number of industrial applications such as the precipitation of proteins, the wetting out properties, the rendering of fabrics water repellent, the adsorption of *escherichia coli*, and the precipitation of negative particles. He said that wool, when treated with a surface-active cation, will absorb latex readily. Significant was his mention of a possible method of titrating surface-active cations with surface-active anions, where the end point is indicated as the point of maximum change in surface tension.

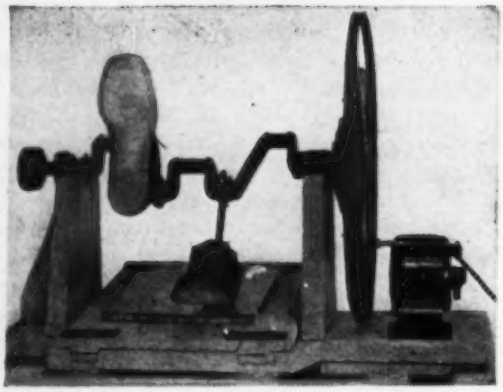
Industrial Soaps

In his paper on "Industrial Soaps, Their Properties and Special Uses," Dr. J. W. McCutcheon stressed the structure and properties of the various fatty acids that comprise the soap molecule and how various changes in fatty acid structure influence the properties of the derived soaps, citing, for example that unsaturation of the fatty acid chain causes increased solubility of the derived soap and that polymerization of unsaturated acids for soap making has the same effect on them as hydrogenation in offering a less soluble soap giving higher detergency power when used with hot water.

Packaging Advice

Clement W. Watson, J. Walter Thompson Co., New York, offered some useful views on the subject of "Packaging for the Consumer." He does not believe in keeping the same package year after year and feels that a good new package, attractively designed to please people will always outsell a firmly entrenched old package. In cases of pick-up trade or over-the-counter sales, the package must sell itself and eye-attraction is all important.

Mr. Watson stated it is not necessary to spend large sums in order to get an attractive package. In fact, he believes many good packages come from common sources, and recommends taking the slightly-above-the-middle-grade approach by going to a good but not fancy designer. Mr. Watson offered as the three keynotes to successful package design, "courage, imagination, and good taste."



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The Lowell line is complete. There is a sprayer or duster for every need. Why be "insecticide-wise and sprayer-foolish" when you can get Lowell quality? Combine Lowell Sprayers and Dusters with your product to make a fast-selling package of insect death. Write us!

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Made to conform with N.A.I.D.M. Specifications and Federal Insecticide Act of 1910.

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"Modern Soap Making" *by Thomssen and Kemp*

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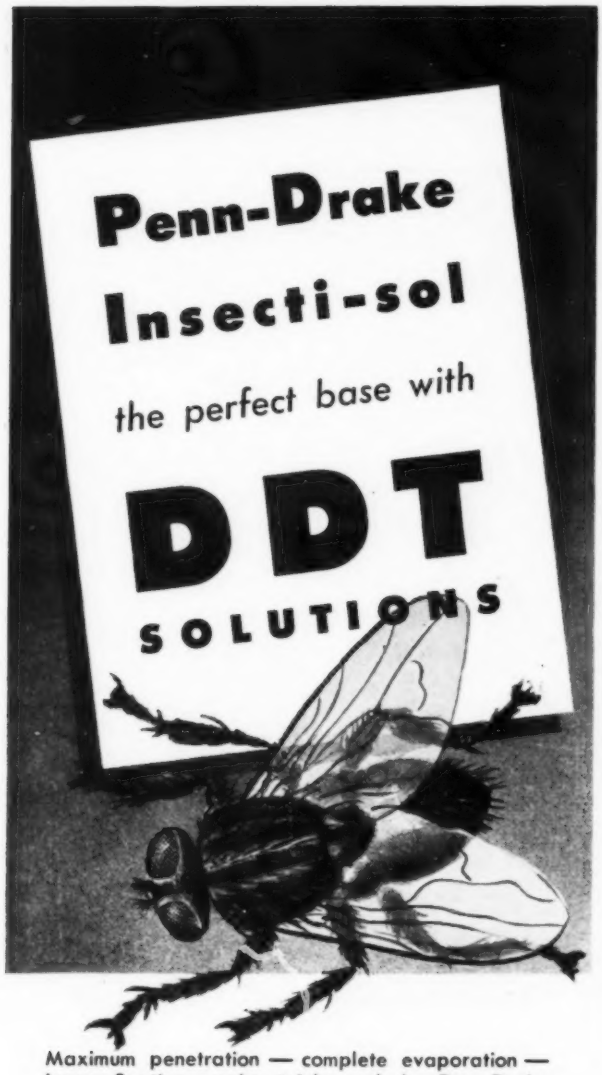

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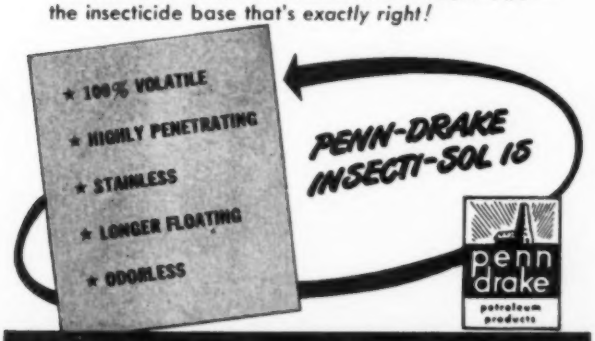

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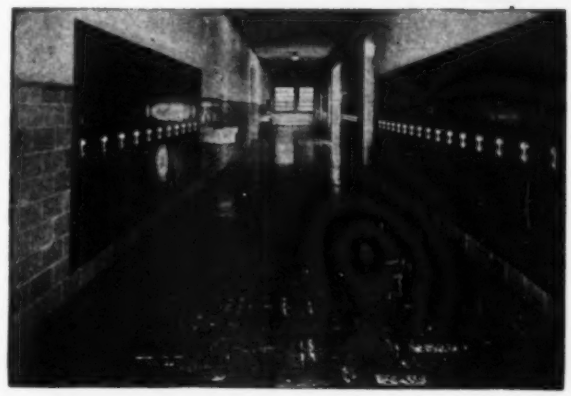

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Federal Mastic Tile Sealer forms a hard, long wearing. impervious sealer that resists vegetable and animal fats and other deteriorating elements. May be easily cleaned with mild soaps. It holds up the wax finish and gives floors a far better appearance. Covers 1000 square feet per gallon. This sealer may be easily removed when required.

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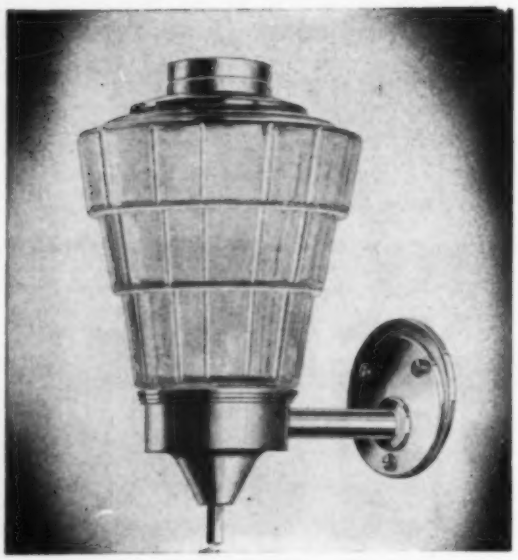

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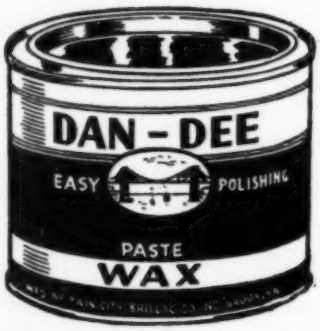

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Heavy Cream
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TWIN CITY
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TRADE NEWS . . .

Turner to Dodge & Olcott

Maurice B. Turner recently joined the technical sales staff of the insecticide division of Dodge and Olcott Co., New York. Mr. Turner was formerly with Dow Chemical Co. where for a number of years he worked in the Dowicide division in Midland, Michigan and later in the East.

With Dodge and Olcott, he is contacting insecticide users in a program of sales development work, as a technical sales representative. He is a graduate of North Dakota University.

Consider New Wax Division

Discussion of the possibility of organizing a wax division of the National Paint, Varnish and Lacquer Association was the object of an informal meeting of 15 manufacturers of floor waxes and polishes held in Atlantic City during November. They were told by a representative of the Association that it could set up a wax division provided a sufficient number of manufacturers were interested and provided there were problems and objectives on which such a division could work which would be of definite benefit to the floor wax industry.

Fuld Coast Plant Moves

Fuld Brothers, Inc., Baltimore, announced early last month that their Los Angeles plant had relocated at 1256 Factory Place, Los Angeles 21, Cal.

Nelson Leaves Selig Co.

John Nelson, formerly sales manager of The Selig Co., Atlanta, is reported to have resigned this position.

Houston PCA Elects

Officers were elected for the coming year at the monthly meeting of Houtson Pest Control Association November 21st. T. H. Hardy was elected president and B. L. Hearn became vice-president. The new secretary is J. L. Howell, and Mrs. Mary LaBorde was chosen treasurer. Directors for the coming year are A. L. Brannon, E. H. Guinn, R. F. Barrett, and Otto Ritter.

J. L. Brenn of Huntington Laboratories, Huntington, Ind., has accepted the post of chairman of the membership committee of the newly formed Potash Soap Association.

New Geigy DDT Booklets

Geigy Company, New York, has released eight new leaflets giving specific information on how, when, and where to apply Geigy DDT compositions for best results. The leaflets cover use of DDT on shade trees, field crops, livestock, potatoes, truck crops, flowers, shrubs, lawns, dairy cattle, and fruit trees.

Defer PCA Purdue Meeting

Because of crowded conditions at Purdue University, the yearly conference of Pest Control Operators, usually held in January, has been postponed until later in the year.

PCO Conferences Dates Set

Dates for the annual southern, eastern, and Canadian Pest Control Operators conferences were released in the November 25th service letter of National Pest Control Association. The southern conference will be held at Louisiana State University, Baton Rouge, January 30-31, and February 1st, 1947. The eastern meeting will be held at Massachusetts State College, Amherst, Mass. February 3d, 4th, and 5th, 1947, and the Canadian group will meet at University of Montreal, February 17th, 18th, and 19th, 1947, followed by the annual meeting of the Canadian Pest Control Operators Association on February 20th.

Velsicol Enters 1068 Suit

Velsicol Corp., Chicago, manufacturer and distributor of the insecticide, 1068, has filed suit in the Superior Court of Cook County, Illinois, against Dr. Julius Hyman, formerly an officer of that corporation. In the suit, Velsicol Corporation alleges that Dr. Hyman made certain applications for patents in his own name covering inventions which the Velsicol Corporation claims are in fact the sole property of the Corporation. The Velsicol Corporation asks that Dr. Hyman be required to assign and turn over to it the patent applications.

In addition to making the foregoing announcement, the Velsicol Corporation also stated: "There will be no interruption in the expansion of Velsicol's research and production facilities for the manufacture of 1068 or any of its other products."

Monsanto Advances Two

Monsanto Chemical Company announced last month the appointment of John L. Gillis, former general export manager and assistant director of the foreign department, as head of the foreign department. Mr. Gillis succeeds Arnold H. Smith, head of the foreign department for the past year, who has been named as representative of the Executive Committee to consolidate the interests of Monsanto in Australia.

Consulting Chemists Elect

At their annual meeting in New York on October 22nd, the Association of Consulting Chemists and Chemical Engineers elected Nicholas M. Molnar as their new president. Mr. Molnar is president of Molnar Laboratories and of Fine Organics, Inc., New York.

DDT EMULSIFIERS

Proved by Field Use

ATLOX 1045-A. For DDT emulsifiable concentrates that remain clear indefinitely at temperatures as low as —18° C. DDT concentrates made with ATLOX 1045-A emulsify quickly and easily in hard, soft, or sea water — more than meeting exacting UNRRA specifications.

ATLAS G-1266. Designed especially to help you make the most economical and inexpensive DDT emulsifiable concentrates. These will disperse readily in hard, soft or sea water, forming emulsions with a minimum of creaming and with no oil separation up to twenty-four hours.

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Potash Soap Assn. To Meet Jan. 14

THE first annual meeting of the newly formed Potash Soap Association will be held at the Hotel Cleveland, Cleveland, Ohio on January 14th. Among the scheduled speakers will be Representative Estes Kefauver, who presided at several of the sessions of the House Small Business Committee last spring when it was investigating fat and oil controls. Representative Kefauver will speak on "What Congress and the Executive Departments of Government Can And Are Doing To Help Small Business." Three other government representatives will also speak. Thomas W. Howard, Manager of the Department of Manufacture of the Chamber of Commerce of the United States will discuss "Uniform Cost Accounting as an Aid to Sound Business Management." R. M. Walsh, an economist with the Bureau of Agricultural Economics, will discuss "How to Forecast Fat and Oil Supplies From Crop Reports."

"The Fats and Oils Outlook" will be discussed by Harry Forsman, a member of the brokerage firm of Zimmermann, Alderson and Carr, New York, who is well qualified by long experience in selling fats and oils to give soapmakers an authentic picture of the future fat and oil outlook. Other speakers will discuss both the alkali and the container situation as they effect potash soap manufacture. Ira P. MacNair, publisher of *Soap & Sanitary Chemicals*, will speak on "The Value of Advertising and Publicity to the Potash Soap Manufacturer."

Following the Raw Materials and Manufacturing Forum, the meeting will be thrown open for a round table discussion for any problems of interest to potash soap manufacturers. The regular business meeting of the new association will follow, with reports being presented by officers and committee chairmen. Six directors will be elected for one year terms and six for two year terms and permanent officers will be chosen. The by-law provides that no director may succeed himself and that all officers are to be elected by a ballot of the members.

Details of the program are in charge of the committee on which the

HERBERT KRANICH
Interim President of the Potash Soap Association

temporary president of the Potash Soap Association, Herbert Kranich of the Kranich Soap Company, serves as chairman. Other members include A. Roy Allison of The Stevens Grease and Oil Co., Dudley J. Bachrach of Clifton Chemical Co., H. J. Brownstein of Hysan Products Co., L. H. Gerson of The Gerson-Stewart Corp., V. W. Haag, Sr., of The Haag Laboratories, R. B. Hillyard of Hillyard Chemical Co., Leonard J. Oppenheimer of West Disinfecting Co., F. J. Pollnow, Jr., of Vestal Chemical Co., Carl E. Schaad of Chemical Mfg. and Dist. Co., and J. H. Zucker of State Chemical Mfg. Company. The program Committee is being assisted by a local Committee on Arrangements made up of Clevelanders. It consists of Messrs. Allison, Gerson and Zucker, who are also members of the Program Committee, and M. J. Murphy of Murphy-Phoenix Co. as chairman, and Geo. L. Williams of The Geo. L. Williams Co.

Preceding the president's dinner in the evening will be a cocktail party. All soapmakers are invited to attend this first annual meeting of the Potash Soap Association whether or not they are members.

—— • ——

Potash Soapers Meet in N. Y.

A special meeting of the new Potash Soap Association was called in New York the afternoon of December 3rd, at which Herbert Kranich of Kranich Soap Company, interim president of the new association, outlined details of the program for the first annual meeting to be held in Cleveland, December 14th. Approximately thirty potash soap manufacturers attended the meeting and discussed at considerable length the program of activities to be engaged in by the new association. Among the suggestions was one that the Association sponsor a book on the manufacture, testing and use of potash soaps.

—— • ——

Packaging Institute Meets

The eighth annual meeting of the Packaging Institute was held at the Stevens Hotel November 25th. The meeting, the first open forum held since the end of the war, was attended by manufacturers of foods, drugs, tobacco products, cosmetics, beverages, bakery products, confectionery, appliances, petroleum products, as well as principal manufacturers of containers, chemicals, and packaging machines. Following two general sessions devoted to subjects of broad interest, the remainder of the forum was devoted to discussing packaging problems of particular industries.

—— • ——

ADCA Elects—Holds Party

At their annual business meeting held in Detroit in November, Allied Drug & Cosmetic Association of Michigan elected the following as officers for the coming year: Stewart Cowell, J. T. Baker Co., president; John K. Stevenson, R. M. Stevenson Co., vice president; L. R. Farnum, Gelatin Products Co., treasurer; A. S. Bedell, Beauty Counselors, Inc., secretary. The Association's annual Christmas Party, being held December 14th is at the Hotel Book-Cadillac, Detroit. Arrangements were handled by W. E. Luff, Mallinckrodt Chemical Works.

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Sanitary Suppliers Meet in N. Y.

THE National Sanitary Supply Association held a Regional Meeting in New York December 5th. The one day session was held at the Hotel Commodore immediately following the close of the annual meeting of the National Association of Insecticide & Disinfectant Manufacturers. Martin J. Peters of Moore Brothers, N. Y., vice president of the association, acted as chairman of the committee in charge, assisted by Lester Brown of I. Lester Brown Company, T. Gilleran of John T. Stanley Company, and I. Hermann of Astor Supply Company.

Six talks were presented, with major attention concentrated on the supply outlook. In the first of these talks, Gordon Baird of Baird & McGuire, Inc., Holbrook, Mass., and St. Louis, discussed the outlook for supplies of disinfectants over the coming year. He said that in view of the acute shortage of fats and oils, rosin, pine oil, coal tar raw materials and alkalis, the prospect for supplies of coal tar, pine oil or cresylic type disinfectants is very dark. Since one leading manufacturer will not produce any tar acid oils during 1947, the government has banned further exportation of tar acid oils and may shortly expand this ban to cover coal tar disinfectants as well. Mr. Baird indicated that little relief could be expected from imported tar acids. As the one bright spot in the picture, he pointed to adequate supplies of cationic disinfectants.

Other speakers at the morning session included Jack Gantz of Empire Brush Works, Port Chester, Conn., who spoke on brushes, and A. J. Lipstock of Lightbuoy Industries, Brooklyn, who reviewed mops and brooms.

Following the luncheon, at which Jack Varley of Baird & McGuire, Inc., St. Louis, president of the National Sanitary Supply Association, presided officers, members of the board of directors and former officers and directors were introduced. Leo J. Kelly, executive vice-president of the National Sanitary Supply Association, spoke on the need for, the work of and the growth of his Association. Martin J. Peters of Moore Bros. Co., New York, chairman of the first Eastern Regional Meeting of the Sanitary Supply Association, introduced the first speaker of the afternoon session: Jay Zucker of State Chemical & Manufacturing Co., Cleveland, who spoke on "Training of Salesmen." In his talk Mr. Zucker pointed out present conditions of easy sales and big commissions will not continue indefinitely. "This is the time to start to teach our junior salesmen the better principles of business, such as the advantages of courtesy, diplomacy and good manners." The speaker then outlined the duties of the sales manager. Describing the sales manager as "the go-between" of his men and management, Mr. Zucker advocated frequent and regular sales clinics, presided over by the sales manager. He also described as a function of the sales manager the accompanying of the salesman on difficult calls. The speaker concluded by urging management to "instill in the salesman a competitive, cooperative spirit."

The next speaker, W. A. McConlogue of Colgate-Palmolive-Peet Co., Jersey City, N. J., and former chief of the Oils and Fats branch of the War Food Administration, pointed out that both the soap and the sanitary supply industries have the obligation of selling cleanliness. Both industries are handicapped in fulfilling this obligation, however, by the current shortage of fats and oils. Stocks on Nov. 1, the lowest at any time since during or before the war, were estimated by the Department of Agriculture to be 891 million pounds. Mr. McConlogue then traced the war-time soap shortage to its numerous and diverse uses in war material. He predicted that by 1947 the U. S. would once again be a net importer of fats and oils as a result of nearly normal imports of coconut oil.

As for synthetic detergents, Mr. McConlogue had this to say: " . . . synthetic detergents will maintain and expand their markets for use under hard water conditions and other conditions under which soap is at a disadvantage . . . there is little likelihood that synthetics will replace soap completely . . . at present it appears that synthetics will have a greater opportunity to replace products in the sanitary supply field than in an allied field such as commercial laundering."

In conclusion Mr. McConlogue declared that "if we are spared from the severe crippling effect of prolonged labor difficulties we can expect 1947 to produce a decided improvement in general conditions and an increased supply of the kind of soaps and detergents . . ."

—— • ——

No Nacconol Advance

National Aniline Division, Allied Chemical & Dye Corp., New York, has issued an announcement that there will be no advances in the prices for "Nacconols," akyl aryl sulfonate synthetic organic detergents, manufactured by that company. Because of price advances in soaps and detergents generally, the company has issued the statement. In line with cost savings resulting from technical and production advances, the company states, the price of "Nacconols," initially introduced at 50 cents per pound fifteen years ago, has been continuously reduced to present levels which stand at approximately one-third of the original price.

—— • ——

Lever Elects Pendergast

At a recent meeting of the board of directors of Lever Brothers Co., Cambridge, Mass., Martin J. Pendergast was elected secretary of the company. Mr. Pendergast succeeds Floyd S. Davis who has retired after 26 years at the firm's headquarters in Cambridge. Mr. Pendergast who joined the accounting department of Lever Brothers Company in 1923, graduated from Northeastern University School of Law in 1928. After law school, he was transferred to the legal department of Lever Brothers and in 1933 was named the company's assistant secretary.

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The Asphalt Tile Manufacturers have constantly warned against the use of water waxes on new installations because the water content in the liquid type of water waxes seeps through, and lifts the tiles. This danger has been completely eliminated by this new product.

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The accompanying illustration shows three views of the new laboratories of G. H. Wood & Co., Ltd., industrial sanitation manufacturers in Toronto. Story on new plant below.

Western Sanitary Men Meet

The National Sanitary Supply Association held its first western regional meeting at the Whitcomb Hotel, San Francisco, California, November 15th and 16th. Some 200 members from the Western Region attended. Highlights of the meeting were panel discussions led by S. S. Hockwald. One panel was made up of E. Thompson, By-Chemical Products, San Francisco; A. Stohlton, Easterday Supply Co., San Francisco; and Jules Lovinger, Lovinger Disinfecting Co., Salt Lake City, Utah. This panel discussed "Salesmen's Compensation." "Salesmen's Territories" was discussed by Harold Berliner, Hockwald Chemical Co., San Francisco; Leo Moobery, Best Maintenance Co., Los Angeles; and E. H. Paull, United Janitor Supply Co., Seattle. "Unfair or Unethical Sales Problems" was a subject for panel discussion by Paul Koss, Paul Koss Supply Co., San Francisco; Roy Thomas, Thomas Supply Co., Oakland; and Howard V. Johnson, Mission Chemical Co., San Diego. "Cost Accounting and Method of Mark-up on Merchandise" was discussed by Leon Riese, Keene-Riese Supply Co., Oakland; Charles Chabin, M. L. Chabin Co., San Francisco; and Herbert Stewart, Packer-Scott Co., Portland, Ore.

The manufacturers present discussed various products and this discussion group was headed by Arthur A. Newfield. The paper situation was discussed by G. S. Runyan, Crown Zellerbach Corp. and "interesting facts on quaternary ammonium compounds" by Dick Coen, L. H. Butcher Co. The metal ware situation was covered by Coleman Huntley, Boyle Mfg. Co. Amos Illif, Pacific Coast Brush Co. explained the problems of the brush manufacturer. A paper on disinfectants and soap was presented by Louis Isenberg of Fuld Brothers. Arthur Newfield of Bobrick Mfg. Co. covered the field of soap and dishwashing compound dispensers.

The following committee handled all arrangements: S. S. Hockwald, Arthur A. Newfield, George Keenan, Augustus Mierson, L. M. Caro, S. Coldberg, Paul Koss, A. Stohlton and Harold Lewis. Leo J. Kelly, executive vice-president of the Association addressed the meeting.

Puritan Appoints N. Y. Reps.

Puritan Chemical Co., Atlanta, announced recently that it had appointed the newly formed partnership of Schilling & Hughes manufacturers' representatives, to represent Puritan in the Metropolitan New York area. Thomas J. Hughes, for a little more than a year prior to the formation of the partnership company with Joseph Schilling, on Nov. 1, was with the Paper Products Division of Continental Can Co., New York. Previously he had been with Crown Can Co., New York, for about four and one-half years. Mr. Schilling, who recently received his discharge from the U. S. Navy as a lieutenant commander, was an assistant sales manager with Procter & Gamble Co., Cincinnati, for about four years before going into service. Schilling & Hughes, with headquarters at 1186 Broadway, carries related lines of merchandise for house furnishing departments and hardware stores.

Form Julius Hyman & Co.

Dr. Julius Hyman, formerly executive vice-president of Velsicol Corp., Chicago, who resigned this post a few weeks ago, has just organized Julius Hyman & Co., with headquarters in Denver, Colo. Dr. Hyman is president of the new company which will manufacture a chlorinated hydrocarbon insect toxicant of the formula C_{10} H_6 Cl_8 to be sold under the name "Octa-Klor." An eastern sales office has been established at 11 West 42nd St., New York. J. Newton Hall, sales manager of the company, and Dixon C. Van Winkle of the sales staff will make their headquarters at this office. Mr. Hall was formerly in charge of the New York sales office for Velsicol Corp.

Associated with the new company as entomologist is W. E. McCauley who was formerly with Velsicol Corp. Another member of the Hyman executive staff is Lloyd M. Joshel who has been named general purchasing agent. E. Despres, formerly advertising manager of Velsicol Corp. is advertising director of Hyman & Co.

G. H. Wood Co. Expands

One of the large manufacturers of sanitation products in Canada, G. H. Wood & Co., Ltd., has reported the recent acquisition of new premises in Toronto which will house their head office, laboratory and Toronto plant. The buildings contain over 110,000 square feet of space, are served by three spur railway lines, and will make possible an earlier release of several new products. An additional plant is located at Montreal, and another is under construction in British Columbia.

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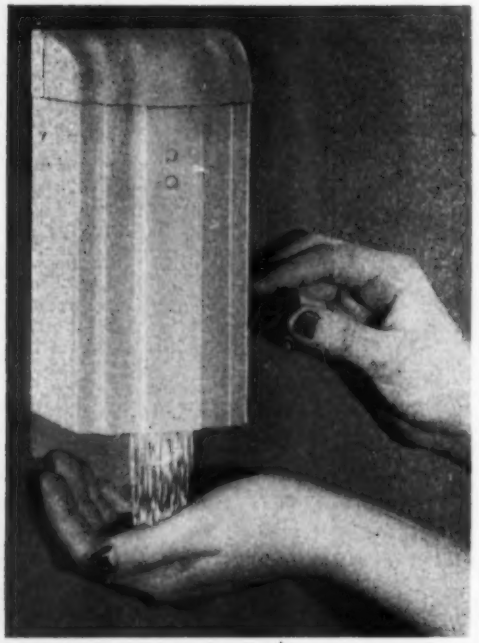

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Hercules Tests Toxaphene

A new insecticide, of the chlorinated camphene type, under the trade name of "Toxaphene" has been announced by Hercules Powder Co., Wilmington. Tests, run for the past 18 months at more than 75 different locations throughout the country, indicate that the new product, then known as "Hercules Synthetic 3956," will be fully as effective as DDT against certain insects and more effective against others. It is expected to be a useful agricultural as well as industrial and household insecticide and when combined with "Thanite," is expected to have quick knockdown properties. "Toxaphene" is, at present, available only to qualified testing agencies for experimental use in eight forms: technical grade, 25 per cent wettable powder, 25 per cent oil soluble concentrate, 50 per cent water miscible concentrate, 10, 20, and 50 per cent dust concentrate, and "Thanite" plus "Toxaphene."

New Lofstrand Sprayer

Lofstrand Co., Silver Spring, Md., has released a folder describing the Lofstrand 2-quart size sprayer. The sprayer has a hand pump attached to the top of the container and a valve-cock at the side to which may be attached a gun and hose. It is of stainless steel and machine brass construction, and is offered for garden, building, and home use equipped with any one of four available nozzles: solid stream, flat spray, cone spray, and mist spray. Copy of folder may be obtained from the company.

Schneider New Velsicol Pres.

F. P. Schneider was recently elected president and general manager of the Velsicol Corporation, Chicago, at a special meeting of the board of directors. He succeeds Julius Hyman, executive vice-president, who recently resigned. Mr. Schneider has been secretary and treasurer of the Velsicol Corporation since its founding in 1931. Previously he had been prominent in the paper manufacturing and oil refining fields. The new president's plans are to expand the manufacturing and production facilities of Velsicol to handle demands for coresin oils, synthetic resins, aromatic solvents and in-

F. P. SCHNEIDER

sect toxicant solvents—and the insect toxicant, 1068.

Discuss Model State Law

Discussion of the proposed uniform state statute covering insecticides, fungicides, rodenticides, etc., was included on the agenda of the Council of State Governments which met in Chicago last month. Governors or other executive officers and officers-elect of fourteen midwestern states were in attendance to formulate new state legislative programs in the light of the recent election results.

Shinn Joins Lofstrand

Lofstrand Co., Silver Springs, Md., recently announced that H. Sherwood Shinn is heading the company's sprayer division. Mr. Shinn leaves the Office of Chief of Engineers where he directed the development of knapsack stainless steel insecticide sprayers used by the Army during the war.

Heyden Appoints Askin

Appointment of Simon Askin as director of purchases was recently announced by Heyden Chemical Corporation, New York. In his new post, he will have charge of all purchases, including raw materials and equipment. Mr. Askin is also assistant secretary and assistant treasurer of the corporation.

Schroeder of M-G-K Ill

Clay Schroeder of McLaughlin, Gormley King Co., Minneapolis, returned to Minneapolis late in November to recuperate, after being confined to a Washington hotel since November 9, because of a mild heart attack.

Louisville Chemical Moves

Louisville Chemical Co., Louisville, recently moved into their new building at the corner of east Jefferson and Hancock streets in Louisville. The new four-story building has display windows on both streets.

Sturgeon NPCA President

At the 14th annual convention of the National Pest Control Association held at the Hotel Roosevelt, New Orleans, late in Ooctober, J. Harvey Sturgeon of Sturgeon Pest Control Co., Louisville, Ky., was elected president. Mr. Sturgeon was born November 22nd 1907, in Lebanon, Kentucky. He was educated in Kentucky institutions and moved to Louisville in 1922. He became associated with the Louisville Chemical Co. in 1930. In 1934, Mr. Sturgeon attended the first meeting of the Association in St. Louis, and has been in attendance at every meeting since that time. In 1937, he founded the company that bears his name. Mr. Sturgeon was elected a director of the National Pest Control Association in San Francisco in 1941, and vice-president at Chicago in 1944. For the past five years, he has been a co-chairman of the methods, materials, and standards committee for the industry. In 1945, he was appointed general chairman of the recent convention.

Pacific Chemical Exposition

The California Section of the American Chemical Society has announced plans for a Pacific Chemical Exposition to be held in the San Francisco Civic Auditorium Oct. 21 to 25, 1947. Paul H. Williams of Shell Development Co. has been appointed general chairman and active management has been assigned to Marcus W. Hinson, who has handled the National Chemical Exposition in Chicago since 1940.

F.O.'s

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Albert B. Lambert Dies

Albert B. Lambert, former head of Lambert Pharmacal Company, St. Louis, died November 12th at his home in St. Louis at the age of 70. Mr. Lambert became president of the Lambert company in 1896, and while living in Europe, established two company factories, one in Paris and the other in Hamburg.

Conference Hears Curlett

John N. Curlett, vice-president of McCormick & Company, Inc., Baltimore, was the principal speaker at the dinner meeting of the twenty-third annual industrial conference sponsored by the School of Engineering, Pennsylvania State College, at State College, Pa., on October 17th. Mr. Curlett spoke to the conference on "Administrative Planning in Industry." In conjunction with his speech, he showed a sound slide film, in color, describing the operation of the McCormick Multiple Management Plan.

Koppers Appoints Laurora

Appointment of N. George Laurora in charge of merchandising and promotion on new products for the retail trade for the White Tar Division of Koppers Company, Inc., Kearny, N. J. was recently announced. Mr. Laurora formerly was with the Pepsodent division of Lever Brothers Co.

Rosenthal Co. Renamed

Rosenthal-Bercow Co., Inc., New York, announced early in November the formation of a new corporation to carry on the business formerly conducted under the name of H. H. Rosenthal Co. Management and personnel are the same.

M M & R Advances La Rue

The appointment of I. E. La Rue to the post of New England divisional sales manager has been announced by Magnus, Mabee & Reynard, Inc., New York. Mr. La Rue, who has been with the company 12 years, previously serviced accounts in Michigan, Northwestern Indiana and Ohio. Newly assigned to cover this territory is Stanley T. Olds, formerly a sales representative for M M & R in the metropolitan New York area. Mr.

I. E. La Rue

S. T. Olds

Olds joined the company last year upon his discharge from the Army, where he held the rank of 1st lieutenant.

New Containers By Packard

Packard Container Corp., West New York, N. J., a new company formed last spring reports the development of a new line of containers for soaps, cosmetic, food products, drugs, etc. The new company, formerly a branch plant of the Cleveland Container Co., was bought from the parent company last spring by a group of key personnel of the branch plant. Products manufactured are round spiral wound paperboard tubes used as cores and protective coverings, mailing tubes, and round paperboard cans, with either paperboard or metal covers and bottoms. Officers of the company are: Harold K. Ewald, president; Albert E. Schoenfeld, treasurer; and Irving Rotwein, secretary.

Consolidated Chem Moves

Consolidated Chemical Co., Dallas, specializing in sanitary service, reports that it is moving to new and larger quarters about mid-November. The new building, located at 4828 McKinney Ave., will provide more than 10,000 sq. feet of floor space.

Gill & Kohnen Incorporate

J. S. Gill and M. G. Kohnen, formerly associated with F. W. Steadman Co., have announced the opening of their own offices under the name of Gill Waxes, Inc., at 59 Pearl St., New York.

Plans West Coast DDT Plant

Montrose Chemical Co., Newark, N. J., makers of tricresyl phosphate, crystalline ergosterol and other synthetic organic chemicals, will soon put up a new plant in Los Angeles for the manufacture of technical DDT. A new affiliate, known as Montrose Chemical Corp. of California, will run the new plant, and present plans call for devoting the entire capacity to production of technical DDT. A survey of the western area showed a widespread use of DDT in agricultural insecticides but there was no producer of the basic chemical on the west coast.

Hurley Opens Sales Agency

John H. Hurley, sales executive of Johnson Wax Co., Racine, Wisconsin, has resigned to return to the east and open his own manufacturers' selling agency in New York. Prior to his Johnson Wax sales and promotional responsibilities, which currently included the management of the export division, he was a field sales executive with the Sylvania Electric Products Corporation in the New York and Chicago areas.

Sani-Wax Company Moves

Sani-Wax Company, Dallas, makers of cleaning and polishing compounds for furniture, have announced that their Cleveland, Okla. plant will be moved to Ennis, Texas, in the very near future. Len Acton is president of the company. James Walker, production manager, will be in charge of the Ennis plant.

Hercules Appoints Bunce

Donald A. Bunce has been appointed manager of the new Burlington, N. J. chemical plant of Hercules Powder Co., which is scheduled to start production of synthetic resins and other chemicals around the first of January. Mr. Bunce, now superintendent of the synthetics department plant at Mansfield, Mass., joined the East Greenwich plant of Hercules Powder Co., in 1936 as chief chemist and was later superintendent of that plant.

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PINE SCRUB SOAPS
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New Prentiss Folders

R. J. Prentiss & Co., New York, have just released five folders offering information on their various insecticides. "Prentox Cockroach Concentrate" describes a product of the same name which is a 20% solution in deodorized kerosene of a new insecticide, a chlorinated hydrocarbon having empirical formula ($C_{10}H_6Cl_8$) found by tests, it is claimed, to be three to ten times more powerful than DDT. The recommended formulation is 10% of the concentrate in an oil base. "Prentiss Pyrethrum Products" tells of a pyrethrum powder and also of "No. 20 Pyrethrum Concentrate" which contains 2 grams of pyrethrins per 100 cc. of solvent. "Prentiss Micro-Mesh '10'" describes a finely milled powder containing 10% DDT sold on a royalty-paid basis under re-issue U. S. patent 22,700. A feature of the product is uniformity of grind, producing a particle size claimed to be between 1½ and 4 microns and increasing active surface of the product many thousand fold. The "Prentiss Fortified Red Squill" folder discusses a product of the same name (powder or liquid). The powder is packed in drums of 200, 100, and 50 lbs. net weight. The liquid form, in a concentrate of 10% is used with suitable baits for rat control. The folder also gives information on how to mix effective baits. A folder "Prentiss Pest-Tested Insecticide Concentrates" gives summary information on all the Prentiss products, including "Sabakill," a 50% sabadilla powder, "Prentiss Cube Powder" a rotenone containing product, benzene hexachloride concentrates and a number of other formulations of DDT in addition to the above.

New Velsicol 1068 Bulletin

A new technical bulletin offering a compilation of technical data on "Velsicol 1068" was recently released by Hygienic Chemical Co., Ltd., London. The booklet discusses the chemical and physical properties of this chlorinated hydrocarbon as well as its commercial availability. Extensive tables and charts are presented illustrating its toxicity to roaches in comparison with DDT, and its toxicity to warm-blooded animals. Copies of the bulletin may be obtained by writing the company at 600 Commercial Road, London, E. 14, England.

Bromide Products Bulletin

Westvaco Chlorine Products Corp., New York, has issued technical bulletin No. 203 covering hydrogen bromide anhydrous and hydrobromic acid 48 per cent aqueous. This eight-page technical bulletin gives properties, composition range, analyses and uses. It also cites many interesting reactions of these products, with particular reference to the applicability of hydrogen bromide anhydrous as a catalyst, bromination, esterification, condensation, alkylation, isomerization, oxidation and addition compound. A copy may be secured from Technical Sales Division, Westvaco Chlorine Products Corp., 405 Lexington Avenue, New York 17, N. Y.

Thanite-DDT Spray Booklet

The results of special three-minute tests, patterned on the standard Peet-Grady method using "Thanite"-DDT combination insecticide sprays are the subject of a four page folder recently released by Hercules Powder Co., Wilmington, Del. In these tests, economical proportions of "Thanite" and DDT gave a three minute knockdown of better than 92 out of every 100 flies sprayed. The folder shows the results of tests made with sprays containing one-half per cent of DDT and 0.5 to 3 per cent "Thanite," and five per cent DDT and 0.5 to 3 per cent "Thanite."

New Sanitation Booklets

Industrial Sanitation Research Foundation recently released another in their series of informative booklets on sanitation. Their latest brochure entitled "The Sanitation Field Station," gives details of the features and application of their field service unit. The Foundation's sanitation news letter No. 20 discusses visual aids for a sanitation program and is a bibliography of films on industrial sanitation and allied subjects. Copies of this literature are available.

Folder on New Cleaner

Of interest to maintenance men in all types of industrial plants and buildings is the folder describing "Whistlclean," a new water-soluble industrial cleaner and detergent produced by American Oil and Disinfectant Corp., New York. In addition to explaining its detergent qualities, the folder contains impartial laboratory test data, showing the bactericidal efficiency of the product in concentrations as low as one ounce per gallon. Practical cleaning tips on the use of "Whistlclean" for various surfaces are also included. Copies of the folder are available from the company.

Revises Sanitation Folders

The B-K Sales Division of the Pennsylvania Salt Manufacturing Company has revised and brought up to date two of its leaffets, B-K Sanitation and B-K Bacterial Control for Dairy Equipment, The new eight-page color leaflet on sanitation describes uses for Pennsalt's hypochlorite solution and powder in schools, clubs, office buildings, hospitals, camps, swimming pools, hotels, restaurants and institutions. A table shows dilutions for all uses described. The six-page color leaflet on bacterial control for dairy equipment gives instructions on milk and dairy sanitation. Copies of these leaflets may be obtained by writing to the company offices at 1000 Widener Building, Philadelphia 7.

Aerosols Described

"The insecticide aerosol was ready to break commercially during the war but the military took every aerosol bomb as fast as it was produced," says L. N. Markwood of the Chemical and Drug section, Office of Domestic Commerce, in an article entitled, "The Aerosol-Something New in Insecticides," published in the November 1946 issue of *Domestic Commerce*. The article states that aerosol dispensing of insecticides was developed by the USDA and discusses uses and formulations of aerosol insecticides as well as the general construction of the bombs. The article gives some information on advantages of aerosol dispensing and on market outlook.

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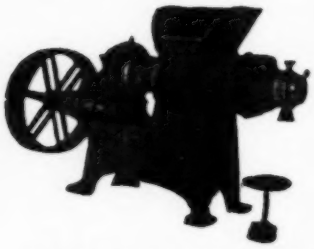

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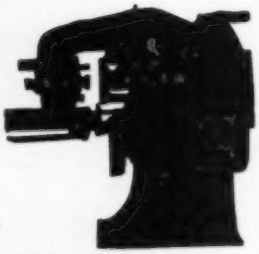

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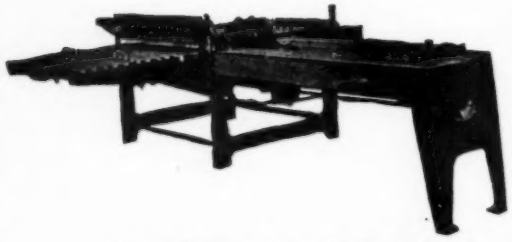

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(*From Page 77*)

a fatty acid are shown (Pg. 77). In the first case, a 99 per cent yield of premium grade product is formed, the undesirable oxidized fats as well as the color bodies being concentrated in a fraction equal to 1 per cent of the feed. In the second example, that of a run of fatty acid, the color bodies are removed in a 2.5 per cent fraction. If desired, the decolorized fatty acids can be further processed to yield stearic and oleic acids by crystallization as previously described.

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No direct information could be obtained regarding the sizes of the units offered to industry in terms of pounds oil processed in 24 hours, however the company stated that there is no direct limitation on capacity, and small size units processing a few hundred barrels per day were available. No cost figures were given and no detailed flow sheets of the new process were available at this writing.

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Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

"...and what's more, that rig is an insult to my intelligence!"

...no Santa Claus?

SALES success is seldom the result of a visit from Santa Claus. It usually comes to those who plug away month in and year out with regular selling and advertising. That the most successful sales organizations have invariably been the most prolific and regular advertisers is not a coincidence. In advertising, as in selling, there is no Santa Claus. The steady pluggers get the business.

If you have in mind playing Santa Claus to yourself in 1947 in the field of soap and detergent products, household insecticides, floor waxes, and allied chemical specialties, investigate the possibilities of regular advertising in

SOAP *and Sanitary Chemicals*

254 WEST 31st STREET NEW YORK 1

A.B.C. paid subscription renewal rate for year ending October, 1945—88.4%

Tale Ends

SAID a buyer of industrial soap to a soap company salesman last month while the dust and smoke of decontrol still obscured any clear view of the immediate future: "What am I going to be paying for soap next month when the shooting all quiets down?" The salesman answered: "Just about double what you paid before decontrol. But based on tallow prices of the past month, it ought to be higher than that!"

• • •

What a soap shortage will do! Last month, the College of Home Economics at Cornell University, Ithaca, N. Y. issued "a soap recipe" to make soap at home and combat the scarcity.

• • •

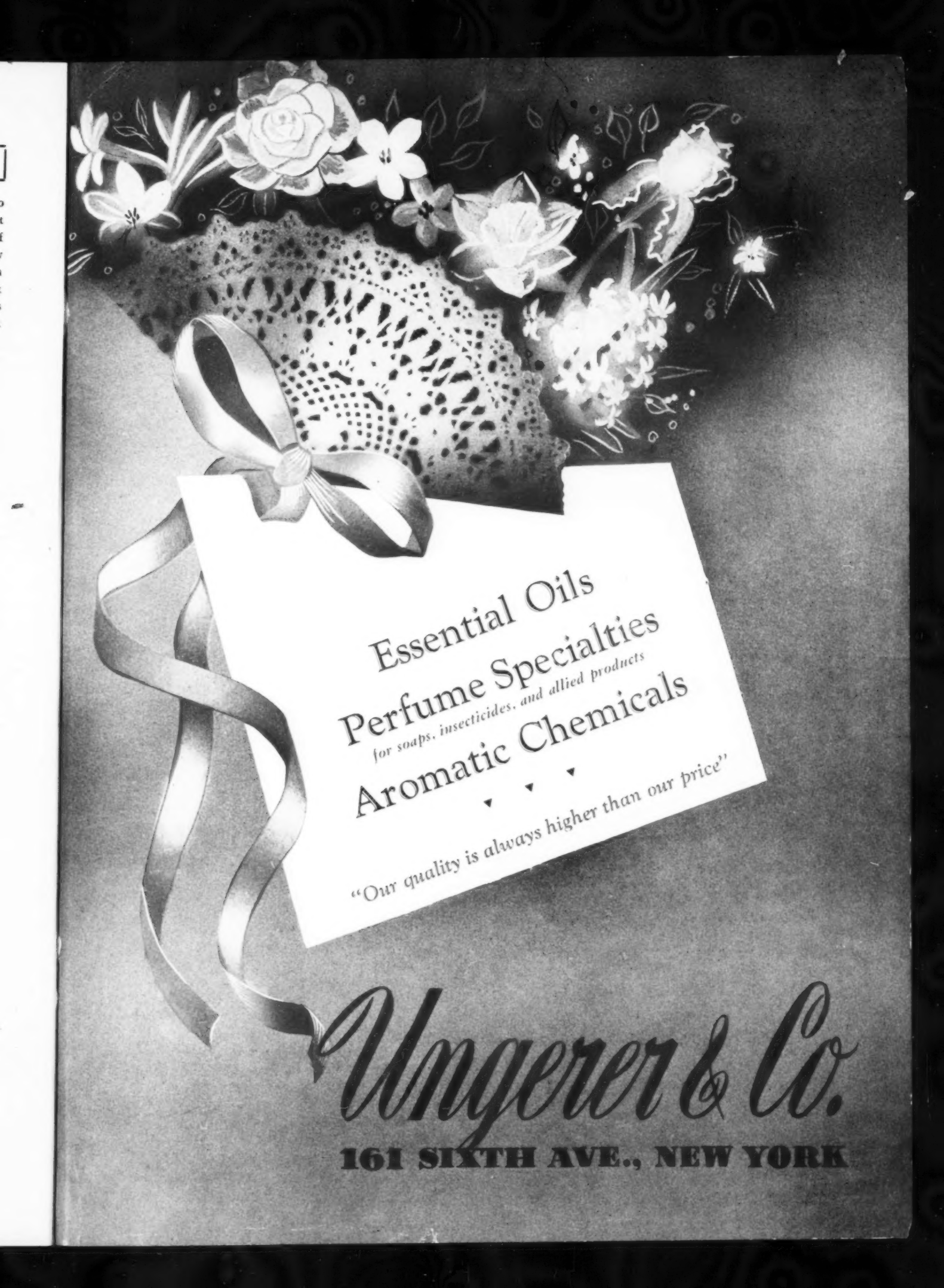
Reports have it that a new "Freon" gas, known as "Freon 31," will be brought out late in 1947. The new insecticide expellent is said to be a whiz, having a pressure of only 22 lbs. at 70 deg. and is the answer to the aerosol manufacturer's prayers in a low-cost "beer-can" product. The new gas is reported to be monochlor monofluormethane whereas "Freon 12" is dichlor difluormethane.

• • •

When American glycerine was pegged at 18½c by OPA ceilings and imported glycerine was selling at 70c New York, we wondered what would happen if they took off all price controls. Last month we viewed the answer as American refined glycerine tripled in price over night, but still stood 20 per cent under the imported material.

• • •

Said the newspapers recently: "A 72 year old woman suffered a broken leg in a wild scramble for soap chips in a Binghamton, N. Y. grocery store. Other frantic shoppers leaped over her prostrate form as she lay semi-conscious on the floor in the fight for a package of soap." Which reminds us that some sage once remarked that the status of the civilization of any nation is proportionate to its per capita consumption of soap!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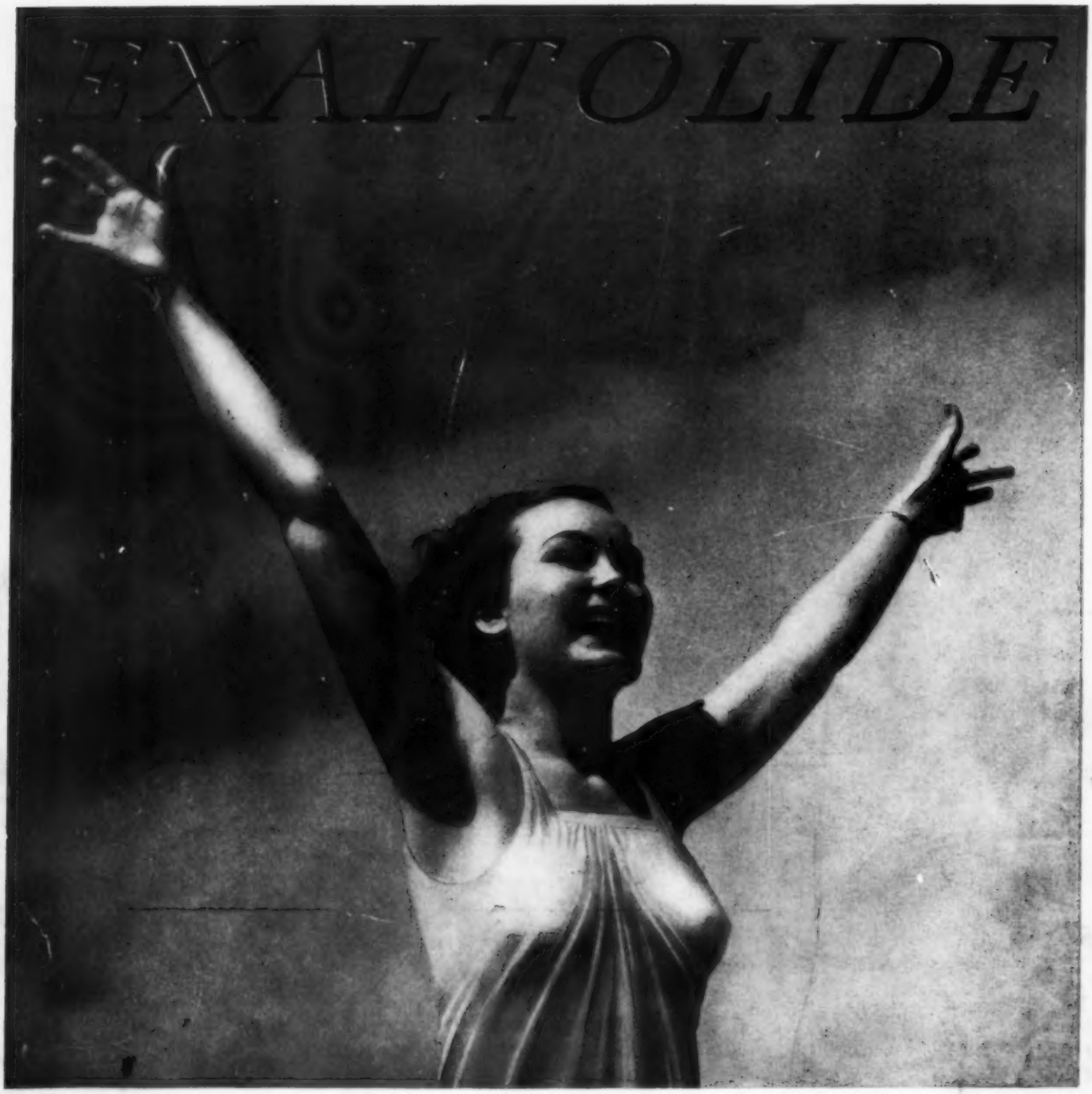

Vibrant as sunshine and pulsating as the infusion of flowering blossoms with the Spring breeze — such is the effect of EXALTOLIDE on your perfume. EXALTOLIDE is the most highly developed, purest and strongest fixative body of a Musk-Ambergris character yet produced.

Perfume extracts, powders of any type, and creams daily are being improved and rounded by its aid, *without change of odor character.* A test will startle you! The value of EXALTOLIDE is priceless — its use economical.

Firmenich & Co